NATIONAL BISON RANGE

NINEPIPE AND PABLO REFUGES

MOIESE, MONTANA

NARRATIVE REPORT - 1970

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge National Bison Range Months of Jan to Apr, 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Richardson Blue Grouse	2,000 a. conifer								50	
Ruffed Grouse	300 a. streambottom								5	
Columbian Sharptailed Grouse	12,000 a. mixed								10	2 birds observed several times this spring
Ring-necked Pheasant	2,000 a. grass & streambottom								100	
Chukar Partridge	6,000 a. mixed								30	
Gray Partridge	12,000 a. Mixed								700	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April . 6)

UPLAND GAME BIRDS

1613

Refuge **National Bison Range** Months of **May** to **Sept.**, 19 **70**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Richardson Blue Grouse	**2,000 a. conifer**		**4**	**40**					**80**	
Ruffed Grouse	**300 a. Stream bottom**								**5**	
Columbia Shurp-tailed Grouse	**12,000 a. mixed**								**12(?)**	**Two observations of 2 birds this period**
Ring-necked Pheasant	**2,000 a. grass & stream bottom**		**6**	**75**					**175**	
Chucker Partridge	**6,000 a. mixed**		**2**	**15**					**40**	
Gray Partridge	**12,000 a. mixed**		**17**	**800**					**1600**	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES:	Use correct common name.
(2) DENSITY:	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3) YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4) SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5) REMOVALS:	Indicate total number in each category removed during the report period.
(6) TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7) REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 6)

UPLAND GAME BIRDS

1613

Refuge National Bison Range Months of September to December, 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Richardson Blue Grouse	2,000 a. conifer					0	0	0	70	
Ruffed Grouse	300 a. stream-bottom					0	0	0	5	
Columbian Sharp-tailed Grouse	12,000 a. mixed					0	0	0	10(?)	No observations this period
Ring-necked Pheasant	2,000 a. grass and stream bottom					0	0	0	350	Heavy influx from outside refuge due to hunting pressure
Chukar Partridge	6,000 a. mixed					0	0	0	30	
Gray Partridge	12,000 a. mixed					0	0	0	1,200	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form N
(June 1945)

BIG GAME

Refuge National Bison Range Calendar Year 1970

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	M:F
Bison	15,600 a. grassland	69			80				8*			402	314	84:100
Elk	5,000 a. conifer & grass	7				2*			1			60	57	90:100
Mule Deer	10,000 a. conif, brush & grass	81			90				7	4	Mont. F&G	321	229	86:100
White-tailed deer	4,000 a. conif, brush, & grass	67			52			1	2	4	Mont. F&G	221	168	104:100
Bighorn Sheep	8,000 a. conifer & grass	10		1		2*		1				52	48	105:100
Antelope	6,000 a. grassland	62				2*	42		2			174	130	104:100
Mt. goat	2,000 a. conifer	4				2*						15	13	unknown
Texas Longhorn steer	5 a. pasture											2	2	-

Remarks:* Buffalo: Losses from various natural causes and accidents - 2 bulls disposed of due to injuries - meat salvaged and donated to schools.

*Elk, Sheep, Antelope and Goats: 2 each collected for research, meat and skeletons sold or donated to schools.

* Antelope: Heavy fawn losses due to undetermined cause.

Reported by Robert L. Barber

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1754
Form NR-_
(June 1945)

SMALL MAMMA

Refuge National Bison Range Year ending April 30, 1970

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator * Control	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Popula-tion
Coyote	15,000 a. all habitat													10
Bobcat	" "													5
Striped Skunk	2,500 a. streambottom													45
Badger	10,000 a. grassland													40
Beaver	100 a. streambottom													5
Mink	" "													10
Muskrat	50 a. wetland													30
Yellowbelly Marmot	2,000 a. mixed													120
Porcupine	4,000 a. "													40
Raccoon	100 a. streambottom													10
Columbian Groundsquirrel	5,000 a. Grassland													300

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert L. Barber

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

INTERIOR--PORTLAND, OREGON

3-1757
Form NR-7
(Rev. June 1960)

(1)

NONAGRICULTURAL COLLECTIONS ECEIPTS, AND PLANTINGS

Refuge National Bison Range Year 19 70

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Timothy	80	R	9/22	Surplus	0	200#							
Alta fescue						7#	Northside range	4#/A	4 acres	16#	Aug.	Unknown	
Western W wheat						18#							
Kentucky bluegrass						15#							
Clover	60	R	9/22		0	60#							

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: Small eroded hill tops mulched and seeded with fescue/ wheatgrass mix.

INTERIOR--PORTLAND, OREGON

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge National Bison Range County Lake State 1970

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
None									
								Fallow Ag. Land	None

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations 3

Refuge personnel

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other Horses	3	24	$48	
				1. Total Refuge Acreage Under Cultivation				40*
Hay - Wild				2. Acreage Cultivated as Service Operation				40

* Periodic cultivation for grass hay and irrigated pasture.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.DUP.,D.C.61-88850

3-1570
NR-89
(4/54)

REFUGE GRAIN REPORT

Refuge National Bison Range Months of January through December, 1970

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Oats	165		165			65	65	100		100	
Barley	817	528	1,345			495	495	850		850	

(8) Indicate shipping or collection points

(9) Grain is stored at Headquarters granary

(10) Remarks Barley received from Kootenai National Wildlife Refuge.

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DUP. SEC., WASH., D.C. 17065

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge: National Bison Range

Proposal Number:

Reporting Year: 1970

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/18-7/20	Canada Thistle	Roadside & Picnic Area	34	2,4-D Amine	18 Gallons	2# Acid Equiv.	Water 1:100	Ground
7/6-7/11	St. John'swort	Upper North Range	1,569	2,4-D Amine	784.5 Gallons	2# Acid Equiv.	Water 20:100	Arial

10. Summary of results (continue on reverse side, if necessary)

Canada Thistle - excellent apparent kill, extent of long range control is questionable.

St. John'swort - apparent kill 90%.

INTERIOR--PORTLAND, OREGON

?-1750
Form ?R-1
(Rev. March 1953)

WATERFOWL

REFUGE MIDDLEPIPE MONTHS OF January TO April, 19 70

(1) Species	(2) Weeks of reporting period: 1/4 - 10 (1)	1/11 -17 (2)	1/18 -24 (3)	1/25 -31 (4)	2/1 - 7 (5)	2/8 - 14 (6)	2/15 -21 (7)	2/22- 28 (8)	3/1 - 7 (9)	3/8 - 14 (10)
Swans:										
Whistling								30	60	230
Trumpeter										
Geese:										
Canada								100	100	266
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other/ TOTAL GEESE:								100	100	266
Ducks:										
Mallard								300	300	530
Black										
Gadwall										
Baldpate									100	515
Pintail									65	1,340
Green-winged teal										60
Blue-winged teal										
Cinnamon teal										
Shoveler										5
Wood										
Redhead										
Ring-necked										
Canvasback										80
Scaup										
Goldeneye										105
Bufflehead										
Ruddy										
Other/ Merganser										65
TOTAL DUCKS:								300	465	2,700
Coot:										

3 -1750a
Cont. N
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE KIRTLAND MONTHS OF January TO April, 19 70

(1) Species	(2) Weeks of reporting period: 3/15-21 (11)	3/22-28 (12)	3/29-4/4 (13)	4/5-11 (14)	4/12-18 (15)	4/19-25 (16)	4/26-5/2 (17)	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling	230	100	3	3	4				4,620		
Trumpeter											
Geese:											
Canada	266	150	91	91	85	85	65		9,093		
Cackling											
Brant											
White-fronted											
Snow				11	13	11	11		322		
Blue											
Other											
TOTAL GEESE:	266	150	91	102	98	96	76		9,415		
Ducks:											
Mallard	530	500	485	485	550	700	1,120		38,500		
Black											
Gadwall							50		350		
Baldpate	515	500	215	215	500	500	795		27,405		
Pintail	1,340	1,000	420	420	400	400	420		40,635		
Green-winged teal	60	100	70	70	225	300	425		9,170		
Blue-winged teal											
Cinnamon teal							15		105		
Shoveler	5	50	200	200	400	400	485		12,215		
Wood											
Redhead		50	85	85	50	150	205		4,375		
Ring-necked											
Canvasback	80	100	165	165	75	100	250		7,105		
Scaup			90	90	60	200	320		5,320		
Goldeneye	105	100	40	40	25	25	25		3,255		
Bufflehead			25	25	15	40	70		1,225		
Ruddy							900		6,300		
Other Merganser	65	50	45	45	25	25	50		2,590		
TOTAL DUCKS:	2,700	2,450	1,870	1,870	2,325	2,840	5,130		158,550		
Coot:				1,115	1,000	2,500	4,200		61,775		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	4,620	230	
Geese	9,415	266	
Ducks	158,550	5,130	
Coots	61,775	4,210	

SUMMARY

Principal feeding areas Grain Fields on surrounding State -owned management area

Principal nesting areas

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

~~3-1750~~
Form NR-
(Rev. March 1953)

WATERFOWL

REFUGE Minnepipe MONTHS OF ~~May~~ TO ~~September~~, 1970

(1) Species	(2) Weeks of reporting period: 5/3 - 9 (1)	5/10-16 (2)	5/17-23 (3)	5/24-30 (4)	5/31-6/6 (5)	6/7-13 (6)	6/14-20 (7)	6/21-27 (8)	6/28-7/4 (9)	7/5-11 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	148	171	250	270	270	270	270	270	270	270
Cackling										
Brant										
White-fronted										
Snow	3									
Blue										
~~XXXXX~~ Total Geese	151	171	250	270	270	270	270	270	270	270
Ducks:										
Mallard	100	150	200	300	300	300	300	300	300	300
Black										
Gadwall	30	10	10	10	10	10	10	10	10	10
Baldpate	70	25	25	25	25	25	50	50	50	50
Pintail	30	20	25	35	100	100	100	100	100	100
Green-winged teal	60		10	10	10	10	10	10	10	10
Blue-winged teal	30	25	35	50	50	50	50	75	75	100
Cinnamon teal	10	5	10	10	10	10	10	10	10	10
Shoveler	95	40	20	20	20	20	20	40	40	40
Wood	5	5	5	5	5	5	5	5	5	5
Redhead	20	20	20	35	35	40	75	100	100	150
Ring-necked	5	5	5	5	5	5	5	5	5	5
Canvasback	20	25	20	20	20	25	30	30	30	50
Scaup	50	40	20	20	20	20	40	40	40	60
Goldeneye										
Bufflehead	5									
Ruddy	340	80	20	20	20	20	20	20	20	40
Other										
Total Ducks	870	450	425	565	630	650	725	795	795	930
Coot:	250	280	280	280	280	280	300	350	400	400

3 -1750a
Cont. N
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Minnepipe MONTHS OF May TO Sept., 19 70

(1) Species	(2) Weeks of reporting period 7/12-18 : 11	7/19-25 : 12	7/26-8/1 : 13	8/2-8 : 14	8/9-15 : 15	8/16-22 : 16	8/23-29 : 17	: 18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	270	325	325	325	335	515	485	(5039)	35,273	14	125
Cackling											
Brant											
White-fronted											
Snow								(3)			
Blue											
Other Total Geese	270	325	325	325	335	515	485	(5042)	35,294		
Ducks:											
Mallard	300	300	400	400	1000	1520	1960	(8430)	59,010	3	156
Black											
Gadwall	20	20	20	20	20	50		(270)	1,890	1	6
Baldpate	50	50	50	50	200	850	3530	(5175)	35,225	1	18
Pintail	100	100	100	100	500	2880	12,360	(17250)	120,750	2	24
Green-winged teal	10	10	10	10	50	30	50	(360)	2,520		
Blue-winged teal	100	100	150	150	200	475	915	(2630)	18,410	5	36
Cinnamon teal	10	10	10	10	10	10	10	(165)	1,155		6
Shoveler	40	60	60	60	100	200	200	(1075)	7,525	1	12
Wood	5	5	5	5	5	5	5	(85)	595		6
Redhead	150	150	150	200	400	400	1600	(3655)	25,585	4	24
Ring-necked	5	5	5	5	5	5	5	(85)	595		
Canvasback	50	75	75	75	120	120	120	(905)	6,335	3	18
Scaup	60	60	60	60	300	310	300	(1500)	10,500	2	12
Goldeneye											
Bufflehead								(5)	35		
Ruddy	40	60	60	60	150	190	200	(1360)	9,520	1	6
Other											
Total Ducks:	940	1005	1155	1205	3060	7095	21655	42950	300,650	23	324
Coot:	600	600	600	1000	1500	2880	4625	(13905)	104,335		400

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	———	———	———
Geese	35,294	515	125
Ducks	300,650	21,655	324
Coots	104,335	4,625	400

SUMMARY

Principal feeding areas Aquatics in reservoir and surrounding cereal grain fields.

Principal nesting areas Islands in north west portion of reservoir

Reported by R. L. B.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-
(Rev. March 1953)

WATERFOWL

REFUGE Ninepipe National Wildlife Refuge MONTHS OF September TO December, 1970

(1) Species	(2) Weeks of reporting period: 8/30-9/5 (1)	9/6-9/12 (2)	9/13-9/19 (3)	9/20-9/26 (4)	9/27-10/3 (5)	10/4-10/10 (6)	10/11-10/17 (7)	10/18-10/24 (8)	10/25-10/31 (9)	11/1-11/7 (10)
Swans:										
Whistling						15	15	30	60	60
Trumpeter										
Geese:										
Canada	485	405	405	895	895	895	670	670	705	705
Cackling										
Brant										
White-fronted		15	15	15	15	15	15			
Snow						5	5	5	5	
Blue										
TOTAL GEESE	485	420	420	910	910	915	690	675	710	705
Ducks:										
Mallard	1,960	5,000	5,000	740	740	2,500	3,145	3,145	3,145	6,000
Black										
Gadwall		100	100	50	50	50	100	100	100	
Baldpate	3,530	6,480	6,480	6,550	6,550	4,000	2,170	2,170	2,170	2,000
Pintail	12,760	21,060	21,060	445	445	600	825	825	825	400
Green-winged teal	50	500	500	365	365	500	645	645	645	300
Blue-winged teal	915	200	200							
Cinnamon teal	10									
Shoveler	200			100	100	200	200	200	200	200
Wood	5									
Redhead	1,600	200	200	55	55	100	100	100	100	100
Ring-necked	5									
Canvasback	120									
Scaup	300	200	200	50	50	50	50	50	50	50
Goldeneye										50
Bufflehead										
Ruddy	200	100	100	50	50	50	100	100	100	100
Other										
TOTAL DUCKS	21,655	33,840	33,840	8,405	8,405	8,050	7,335	7,335	7,335	9,200
Coot:										
	8,000	8,000	8,000	4,825	4,825	1,000	650	650	650	200

3 -1750a
Cont. N
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Ninepipe National Wildlife Refuge MONTHS OF September TO December, 1970

(1) Species	(2) Weeks of reporting period: 11 (11/8-11/14)	12 (11/15-11/21)	13 (11/22-11/28)	14 (11/29-12/5)	15 (12/6-12/12)	16 (12/13-12/19)	17 (12/20-12/26)	18 (12/27-1/2)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling	40	20	20	10	10	5	5	5	2,065		
Trumpeter											
Geese:											
Canada	400	350	265	200	200	100	100	35	58,660		
Cackling											
Brant											
White-fronted									630		
Snow									140		
Blue											
~~X~~Other TOTAL GEESE	400	350	265	200	200	100	100	35	59,430		
Ducks:											
Mallard	8,000	10,000	12,850	13,000	13,000	10,000	9,000	8,000	806,575		
Black											
Gadwall									4,550		
Baldpate	500	500	50	50	50	50	50	50	303,800		
Pintail	100	50							415,765		
Green-winged teal	300	50							34,055		
Blue-winged teal									9,205		
Cinnamon teal									70		
Shoveler	50								10,150		
Wood									35		
Redhead	50								18,620		
Ring-necked									35		
Canvasback									840		
Scaup	50								7,700		
Goldeneye	100	150	150	200	200	200	200	200	10,150		
Bufflehead											
Ruddy	50	25							7,175		
Other											
TOTAL DUCKS	9,200	10,775	13,050	13,250	13,250	10,250	9,250	8,250	1,628,725		
Coot:	0	0	0	0	0	0	0	0	257,600		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	2,065	60	
Geese	59,430	915	
Ducks	1,628,725	33,840	
Coots	257,600	8,000	

SUMMARY

Principal feeding areas Aquatics in reservoir and small grains on surrounding State Management Area.

Principal nesting areas

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1731
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge **Minepipe** Months of **Jan** to **Apr** 19**70**

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	**2**	**4/29**	**2**	**4/29**	**Still**	**Present**				
Red-necked Grebe	**1**	**4/7**	**30**	**4/29**	**"**	**"**				
Eared Grebe	**30**	**4/29**	**30**	**4/29**	**"**	**"**				
Western Grebe	**2**	**4/29**	**2**	**4/29**	**"**	**"**				
Great Blue Heron	**5**	**3/12**	**40**	**4/29**	**"**	**"**				
II. Shorebirds, Gulls and Terns:										
Killdeer	**2**	**3/12**	**50**	**4/29**	**Still**	**Present**				
California Gull	**5**	**4/29**	**5**	**4/29**	**"**	**"**				
Ring-billed Gull	**3**	**3/2**	**150**	**4/29**	**"**	**"**				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	1	3/12	2	4/7	2	4/7		
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
Bald Eagle	1	3/2	2	3/12	2	3/12		

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR—PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge **Minepipe** Months of **May** to **Sept.** 197**7**0

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	**Previous**	**Period**	**3**	**5/8**	**Still**	**Present**				
Red-necked Grebe	**Previous**	**Period**	**225**	**7/15**	**Still**	**Present**			**75**	**225**
Eared Grebe	"	"	**200**	**5/8**	"	"			**Unknown**	
Western Grebe	"	"	**225**	**7/15**	"	"			**75**	**225**
Great Blue Heron	"	"	**180**	**7/15**	"	"	**3**	**52**	**75**	**180**
Pied-billed Grebe	**1**	**8/21**	**1**	**8/21**	"	"			**Unknown**	
II. Shorebirds, Gulls and Terns:										
Common Snipe	**5**	**5/8**	**200**	**7/15**	**Still**	**Present**			**100**	
Forester's Tern	**15**	**5/8**	**75**	**7/15**	"	"			**50**	
Black Tern	**1**	**6/1**	**100**	**7/15**	"	"			**50**	
Killdeer	**Previous**	**Period**	**500**		"	"			**300**	
California Gull	"	"	**1000**	**8/21**	"	"			**300**	
Ring-necked Gull	"	"	**750**	**8/21**	"	"			**200**	

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	10	5/15	100	8/15	Still	Present		
White-winged dove								
IV. Predaceous Birds:								
Golden eagle								
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
		"	"		"	"		
		"	"		"	"		
		"	"		"	"		
		"	"		"	"		

Reported by R. L. B.

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Ninepipe Months of September to December 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous Period		3	9/1	1	9/15				3
Red-Necked Grebe	"	"	25	9/1	20	9/10				25
Western Grebe	"	"	50	9/1	5	10/10				50
Pied-billed Grebe	"	"	5	9/1	1	9/10				5
Great Blue Heron	"	"	100	9/1	Still Present					100
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous Period		200	9/1	1	12/21				200
Common Snipe	"	"	200	9/1	4	12/8				200
California Gull	"	"	1,000	9/1	30	11/15				1,000
Ring-billed Gull	"	"	750	9/1	5	10/10				750
Forester's Tern	"	"	75	9/1	30	9/15				75
Black Tern	"	"	100	9/1	100	9/1				100

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Previous	Period	100	9/1	5	9/15		100
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	1	10/26	2	11/25	2	11/25		
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
Bald Eagle	9	11/25	7	11/25	3	12/29		

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Ninepipe For 12-month period ending August 31, 1970

Reported by R. L. B. Title Asst. Ref. Mgr.

(1) Area or Unit Designation	(2) Habitat Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops	0	Ducks	1,564,360	386	324
	Upland	246	Geese	128,759	70	125
	Marsh	572	Swans	4,620	0	0
	Water	1,204	Coots	216,685	200	400
	Total	2,022	Total	1,914,424	656	849
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

3-1752
Form NR-2
(April 46)

UPLAND GAME BIRDS

1613

Refuge Ninepipe Months of Jan to Apr, 1970

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	b 246 a. grassland								100	
Gray partridge	246 a. grassland								10	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1)	SPECIES:	Use correct common name.
(2)	DENSITY:	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3)	YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4)	SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5)	REMOVALS:	Indicate total number in each category removed during the report period.
(6)	TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7)	REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 46)

UPLAND GAME BIRDS

1613

Refuge Nine Pipe Months of May to Sept., 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	246 a. Grass-land		0	125					200	
Gray Partridge	246 a. Grass-land		0						35	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 6)

UPLAND GAME BIRDS

1613

Refuge Ninepipe Months of September to December, 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	246 a. Grassland								350	Heavy influx into refuge during hunting season.
Gray Partridge	246 a. Grassland								25	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1754
Form NR-
(June 1945)

SMALL MAMMA

Refuge Minnipipe Year ending April 30, 1970

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator * Control	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Meadow Mouse	246 a. grassland													Moderate
Deer Mouse	"	"												"
Striped Skunk	"	"												"
Muskrat	1,672 a. marsh & water													50
Mink	"	"												Unknown
Badger	246 a. grassland													5
Weasel	818 a. marsh & upland													Low
Beaver	2,000 a. marsh & upland													Occasional
Columbian Groundsquirrel	246 a. grassland													Low
Pocket Gopher	"	"												Low
Coyote	"	"												Occasional

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert L. Barber

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

INTERIOR--PORTLAND, OREGON

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Ninepipe County Lake State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
				* All permits are issued and all receips are collected by the Bureau of Indian Affairs, Ronan, Montana.					
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	23	92	*	270
				2. Other				
				1. Total Refuge Acreage Under Cultivation				0
Hay - Wild				2. Acreage Cultivated as Service Operation				0

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1570
NR-8a
(4/54)

REFUGE GRAIN REPORT

Refuge Ninepipe Wildlife Refuge Months of January through December, 1970

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Barley	900		900			344	344	556		556	

(8) Indicate shipping or collection points

(9) Grain is stored at Headquarters Granary

(10) Remarks

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DUP. SEC., WASH., D.C. 17065

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge: Ninepipe

Proposal Number:

Reporting Year: 1970

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		NONE						

10. Summary of results (continue on reverse side, if necessary)

INTERIOR--PORTLAND, OREGON

3-1750
Form NR-.
(Rev. March 1953)

W A T E R F O W L

REFUGE Pablo MONTHS OF January TO April, 1970

(1) Species	(2) Weeks of reporting period									
	1/4 - 10 : 1	1/11 - 17 : 2	1/18-24 : 3	1/25-31 : 4	2/1 - 7 : 5	2/8-14 : 6	2/15-21 : 7	2/22-28 : 8	3/1 - 7 : 9	3/8 - 14 : 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

3 -1750a
Cont. N
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pablo MONTHS OF January TO April, 19 70

(1) Species	(2) Weeks of reporting period: 3/15-21 (11)	3/22-28 (12)	3/29-4/4 (13)	4/5-11 (14)	4/12-18 (15)	4/19-25 (16)	4/26-5/2 (17)	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada					2	2	2		42		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other [illegible] TOTAL [illegible]					2	2	2		42		
Ducks:											
Mallard					250	250	250		5,250		
Black											
Gadwall					10	10	10		210		
Baldpate					100	100	100		2,100		
Pintail					5	5	5		105		
Green-winged teal					30	30	30		630		
Blue-winged teal											
Cinnamon teal					10	10	10		210		
Shoveler											
Wood											
Redhead					5	5	5		105		
Ring-necked											
Canvasback											
Scaup					20	20	20		420		
Goldeneye											
Bufflehead					15	15	15		315		
Ruddy					60	60	60		1,260		
Other Merganser					5	5	5		105		
TOTAL DUCKS					510	510	510		10,710		
Coot:					65	65	65		1,365		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	2	42	
Ducks	10,710	510	
Coots	1,365	65	

SUMMARY

Principal feeding areas: Surrounding grain fields

Principal nesting areas:

Reported by: Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-1
(Rev. Mar. 1953)

WATERFOWL

REFUGE Pablo MONTHS OF May TO September, 19 70

(1) Species	(2) Weeks of reporting period: 5/3 - 9 (1)	5/10-16 (2)	5/17-23 (3)	5/24-30 (4)	5/31-6/6 (5)	6/7 - 13 (6)	6/14-20 (7)	6/21-27 (8)	6/28-7/4 (9)	7/5-11 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada		25	20	20	20	20	20	20	20	20
Cackling										
Brant										
White-fronted										
Snow	5									
Blue										
Total Geese	5	25	20	20	20	20	20	20	20	20
Ducks:										
Mallard	225	50	50	50	50	50	50	50	75	75
Black										
Gadwall	45	5	5	5	5	5	5	5	5	5
Baldpate	65	10	10	10	10	10	10	10	10	10
Pintail	35									
Green-winged teal	35									
Blue-winged teal	20	10	10	10	10	10	10	10	10	20
Cinnamon teal	5									
Shoveler	50	5	5	5	5	5				
Wood										
Redhead					20	20	20	20	20	20
Ring-necked										
Canvasback										
Scaup					35	35	35	35	35	35
Goldeneye										
Bufflehead										
Ruddy	15	110	110	100	10	10	10	10	10	10
Merg.	20									
Total Ducks	515	190	190	180	145	145	140	140	165	175
Coot:	0	45	45	45	45	45	60	60	60	60

Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pablo MONTHS OF May TO Sept., 1970

(1) Species	(2) Weeks of reporting period 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	20	20	15	20	150	300	800	(1510)	10570	2	12
Cackling											
Brant											
White-fronted											
Snow								(5)	35		
Blue											
Other											
Total Geese:	20	20	15	20	150	300	800	(1515)	10605	1	18
Ducks:											
Mallard	75	100	100	100	400	800	1285	(3585)	25095	1	18
Black											
Gadwall	5	5	5	5	5	5	5	(125)	875		
Baldpate	10	10	15	15	200	400	750	(1555)	10885		6
Pintail					1000	2000	5375	(8410)	58870		
Green-winged teal						50	50	(135)	945		
Blue-winged teal	20	20	25	25	50	100	150	(510)	3570		24
Cinnamon teal								(5)	35		
Shoveler								(75)	525		
Wood						20	20	(40)	280		
Redhead	20	20	20	50	150	200	425	(1005)	7035		
Ring-necked											
Canvasback											
Scaup	35	35	35	35	100	150	205	(805)	5635	1	21
Goldeneye											
Bufflehead											
Ruddy	10	10	10	10	10	10	10	(465)	3255		
Other								(20)	140		
Total Ducks:	175	200	210	240	1915	3735	8275	16735	117145	2	69
Coot:	60	60	60	60	100	200	325	(1330)	9310		15

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	10,605	800	12
Ducks	117,145	8,275	69
Coots	9,310	325	15

SUMMARY

Principal feeding areas Aquatics in reservoir and surrounding cereal grain fields.

Principal nesting areas West shore of the reservoir

Reported by R. L. B.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representati breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-
(Rev. March 1953)

WATERFOWL

REFUGE Pablo MONTHS OF September TO December , 19 70

(1) Species	(2) Weeks of reporting period: 8/30-9/5 : 1	9/6-9/12 : 2	9/13-9/19 : 3	9/20-9/26 : 4	9/27-10/3 : 5	10/4-10/10 : 6	10/11-10/17 : 7	10/18-10/24 : 8	10/25-10/31 : 9	11/1-11/7 : 10
Swans:										
Whistling						15	15	15	15	15
Trumpeter										
Geese:										
Canada	940	940	940	1,305	1,305	1,215	1,215	665	665	665
Cackling										
Brant										
White-fronted										
Snow										
Blue										
TOTAL GEESE	940	940	940	1,305	1,305	1,215	1,215	665	665	665
Ducks:										
Mallard	3,250	3,250	3,250	590	590	590	450	450	450	450
Black										
Gadwall	100	100	100							
Baldpate	2,525	2,525	2,525	260	260	260	155	155	155	150
Pintail	13,025	13,025	13,025	640	640	640	125	125	125	50
Green-winged teal	300	300	300	85	85	85	135	135	135	100
Blue-winged teal	100	100	100							
Cinnamon teal										
Shoveler	50	50	50							
Wood	10	10	10	5	5	5				
Redhead	300	300	300	140	140	140				
Ring-necked										
Canvasback	100	100	100				5	5	5	
Scaup	200	200	200	75	75	75	5	5	5	5
Goldeneye										25
Bufflehead										
Ruddy							5	5	5	5
Other										
TOTAL DUCKS:	19,960	19,960	19,960	1,795	1,795	1,795	880	880	880	735
Coot:	6,000	6,000	6,000	3,120	3,120	3,120	100	100	100	50

3 -1750a
Cont. N
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pablo MONTHS OF September TO December, 1970

(1) Species	(2) Weeks of reporting period: 11 (11/8-11/14)	12 (11/15-11/21)	13 (11/22-11/28)	14 (11/29-12/5)	15 (12/6-12/12)	16 (12/13-12/19)	17 (12/20-12/26)	18 (12/27-1/2)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling									525		
Trumpeter											
Geese:											
Canada	500	500	200	150	0	0	0	0	78,435		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
~~XXXX~~ TOTAL GEESE:	500	500	200	150	0	0	0	0	78,435		
Ducks:											
Mallard	400	400	100	100					99,890		
Black											
Gadwall									2,100		
Baldpate	50	50							63,490		
Pintail									289,940		
Green-winged teal									11,620		
Blue-winged teal									2,100		
Cinnamon teal											
Shoveler									1,050		
Wood									315		
Redhead									9,240		
Ring-necked											
Canvasback									2,205		
Scaup									5,915		
Goldeneye	50	50							875		
Bufflehead											
Ruddy									140		
Other											
TOTAL DUCKS:	500	500	100	100	0	0	0	0	488,880		
Coot:									193,970		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	525	15	
Geese	78,435	1,305	
Ducks	488,880	19,960	
Coots	193,970	6,000	

SUMMARY

Principal feeding areas Aquatics in reservoir and cereal grains in surrounding area.

Principal nesting areas

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo Months of Jan to Apr 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	20	4/29	20	4/29	Still	Present				
Red-necked Grebe	5	4/29	5	4/29	"	"				
Eared Grebe	10	4/29	10	4/29	"	"				
Great Blue Heron	35	4/29	35	4/29	"	"				
II. Shorebirds, Gulls and Terns:										
Killdeer	10	4/29	10	4/29	Still	Present				
California Gull	10	4/29	10	4/29	"	"				
Ring-billed Gull	25	4/29	25	4/29	"	"				

(over)

(1)	(2)		(3)		(4)	(5)	(6)
III. Doves and Pigeons:							
Mourning dove							
White-winged dove							
IV. Predaceous Birds:							
Golden eagle	1	4/29	1	4/29	Still Present		
Duck hawk							
Horned owl							
Magpie							
Raven							
Crow							

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo Months of May to Sept. 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous	Period	5	8/27	Still	Present				
Eared Grebe	Previous	Period	25	5/8	Still	Present				
Great Blue Heron	Previous	period	20	5/8	Still	Present				
II. Shorebirds, Gulls and Terns:										
Ring billed Gull	Previous	Period	300	8/27	Still	Present				
Spotted Sand Piper	1	5/8	25	7/27	Still	Present				
Lon. Snipe	200	5/15	200	5/15	Still	Present				
Marbled Godwit	3	5/15	2	5/15	Still	Present				
Kill Deer	45	7/27	45	7/27	Still	Present				

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove									
White-winged dove									
IV. Predaceous Birds:									
Golden eagle									
Duck hawk									
Horned owl									
Magpie									
Raven									
Crow									
Marsh Hawk	1	5/8	1	5/8	Still	Present			

Reported by [redacted]

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo Months of September to December 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous	Period	5	9/1	5	9/1				
Eared Grebe	"	"	5	9/1	5	9/1				
Great Blue Heron	"	"	60	9/1	Still Present					
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous	Period	50	9/1	5	10/26				
Common Snipe	"	"	200	9/1	5	11/23				
Marbled Godwit	"	"	2	9/1	2	9/1				
Spotted Sandpiper	"	"	25	9/1	1	10/10				
Ring-billed Gull	"	"	300	9/1	20	10/26				

(over)

(1)	(2)		(3)		(4)	(5)	(6)
III. Doves and Pigeons:							
Mourning dove							
White-winged dove							
IV. Predaceous Birds:							
Golden eagle	2	9/16	2	9/16	1	10/26	
Duck hawk							
Horned owl							
Magpie							
Raven							
Crow							
Osprey	1	9/1	1	9/1	1	9/1	

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Pablo For 12-month period ending August 31, 19 70

Reported by R. L. B. Title Asst. Ref. Mgr.

(1) Area or Unit Designation	(2) Habitat Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops	175	Ducks	286,405	100	69
	Upland	495	Geese	99,995	4	12
	Marsh	580	Swans	77	0	0
	Water	1,292	Coots	72,450	35	15
	Total	2,542	Total	458,927	139	96
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-1752
Form NR
(April 1946)

UPLAND GAME BIRDS

1613

Refuge [illegible] Months of Jan to Apr, 19 [illegible]

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	670 a. uplands								190	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 66)

UPLAND GAME BIRDS

1613

Refuge **Pablo** Months of **May** to **Sept.**, 19 **70**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	**670 a upland**		**0**	**100**					**300**	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April .6)

UPLAND GAME BIRDS

1613

Refuge Pablo Months of September to December, 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	670 a. upland								250	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1754
Form NR
(June 1945)

SMALL MAMM

Refuge Pablo Year ending April 30, ~~1970~~

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Meadow Mouse	670 a. upland													Moderate
Deer Mouse	"	"												"
Striped Skunk	"	"												"
Badger	"	"												Low
Columbian Groundsquirrel	"	"												Low
Weasel	"	"												Moderate
Coyote	"	"												2
Muskrat	1,807 a. marsh & water													30
Mink	"	"	"											Low
Beaver	"	"	"											2

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert L. Barber

INSTRUCTIONS

Form NR-4 - **SMALL MAMMALS** (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

INTERIOR--PORTLAND, OREGON

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Pablo County Lake State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
				* All permits are issued and all receipts are collected by the Bureau of Indian Affairs, Ronan, Montana.					
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	87	348	*	1,500
				2. Other				
				1. Total Refuge Acreage Under Cultivation				0
Hay - Wild				2. Acreage Cultivated as Service Operation				0

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

NATIONAL BISON RANGE

NINEPIPE REFUGE

PABLO REFUGE

Refuge Narrative Report

Calendar Year 1970

****

UNITED STATES DEPARTMENT OF THE INTERIOR

Bureau of Sport Fisheries and Wildlife
Fish and Wildlife Service
Moiese, Montana

NATIONAL BISON RANGE

Refuge Narrative Report

Calendar Year 1970

PERMANENT PERSONNEL

Marvin R. Kaschke, Refuge Manager
Robert L. Barber, Assistant Refuge Manager
Victor B. May, Refuge Maintenanceman Foreman
Grant Hogge, Heavy Duty Mechanic
Ernest W. Kraft, Maintenanceman III
Sharon A. Scammon, Clerk-Typist (trans. Wildlife Services, Denver)
Susan I. McCollum, Clerk-Typist (E.O.D. 08/06/70)
Edward G. Krantz, Maintenanceman I, WAE
Robert L. Middlemist, Maintenanceman I, WAE
William J. Lampshire, Maintenanceman I, WAE
Carl F. Hruska, Student-Trainee

TEMPORARY PERSONNEL

Robert L. McVey, Laborer
Wayne A. Wetzel, Laborer
Randell E. Evans, Laborer
Nancy A. Larum, Work-Study Employee
Gail Evans, Work-Study Employee
Mary Pat Coulter, Work-Study Employee
David L. Knudsen, Work-Study Empolyee
Cindy Doty, NYC
Rita McLeod, NYC
Brad McCrea, NYC
George McLeod, NYC
Douglas Morigeau, NYC
Dan Hogge, NYC
Brad Neil, NYC
Dean McVey, NYC
Audie Stiner, NYC
Victor Lumphry, NYC

TABLE OF CONTENTS

TABLE OF CONTENTS (Con't.)

TABLE OF CONTENTS (Con't.)

N A T I O N A L B I S O N R A N G E

Refuge Narrative Report

January 1 to December 31, 1970

I. GENERAL

A. Weather Conditions

Annual weather conditions are described as generally fair, with desirable temperatures and above normal precipitation. One short period of extreme cold was recorded January 5 and 6, when the temperature dropped to -22° and -17° respectively. Temperatures moderated and by January 13, the high was 50°. Conditions were so normal we seldom heard the favorite weather comments; "Its the hottest, or coldest, or driest, or wettest season we've ever had."

The following data are from Refuge weather station records:

	Precipitation			Max.	Min.
	Snowfall	This Month	Normal	Temp.	Temp.
January	9"	1.66	.95	52	-22
February	9½	.88	.66	55	17
March	5	1.05	.69	59	4
April		1.36	1.08	72	15
May		2.28	1.78	87	28
June		2.11	1.99	97	34
July		2.54	1.00	101	38
August		.23	.87	102	37
September		.82	.98	84	19
October	Tr.	1.56	1.06	86	15
November	10	.26	.80	58	- 6
December	4½	.13	.88	54	0
	38"	14.88	12.74		

B. Habitat Conditions

1. Water

Irrigation water was plentiful for maintaining the exhibition pasture and picnic area in green and growing condition. Above normal precipitation helped in limiting the need for irrigation.

Ground moisture was adequate throught the summer to maintain good plant growth. Springs flowed freely, providing ample water for the bison and other game animals.

A problem of too much water was encountered on the Jocko River during late spring. Heavy rains fell in upper drainages of the river in mid-May. This, coupled with warm temperatures, caused the Jocko to overflow its banks. When water started flooding, two neighboring ranchers became concerned it might wash out their fish ponds. These ponds had been constructed in the old river channel, to replace fishing habitat lost by rechanneling, as shown on the map.

In a moment of panic the ranchers and a Soil Conservation Service Technician came rushing into the office and accused us of causing the flooding conditions. They stated a log jam in a bend of the river on Bison Range property was posing a threat to flooding downstream. Upon investigation, we determined the problem originated several years hence,and was caused from ranchers straightening the stream and pushing it to one side of the valley. They then rip-rapped the banks. Unfortunately engineering design failed to allow enough for high water, as seen in photo.

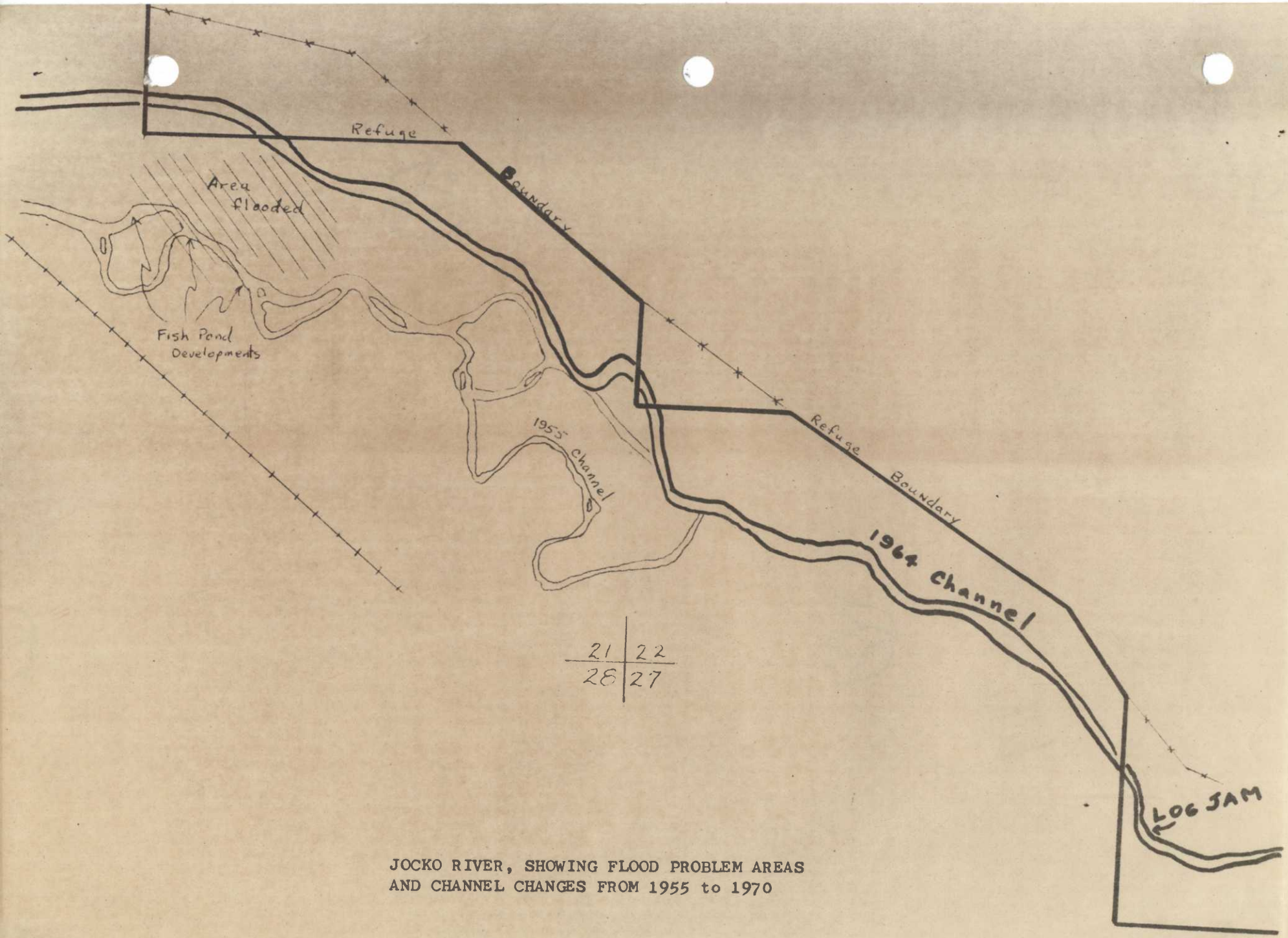
Needless to say we were reluctant to remove the log jam, since it provided some of the only remaining trout habitat. This was once one of the best trout streams in the state. After some heated discussions with the ranchers and SCS personnel we made a public relations effort to remove the log jam. Fortunately, high water made it impossible to accomplish.

We later made it known to the SCS that their technical advice to ranchers was poor and not appreciated. We also questioned, why Agriculture Stablization Conservation Service made payments for rip-rapping streams that had been straightened. This caused much commotion, and resulted in a joint meeting with SCS and ASCS local and state personnel, State Fish and Game fisheries biologist, local ranchers, and Bison Range personnel. It was determined, a joint study was necessary to properly plan future so-called stream improvement and flood control projects. It was verbally agreed to stop all rechanneling and rip-rap until an over-all plan could be developed for approximately six miles of the river.

Fish and Game and Bison Range personnel are attempting to get the stream back into its meandering channel before agreeing to allow any more rip-rapping.

2. Food and Cover

Both food and cover were abundant to meet the needs of Refuge objectives and for maintaining big game numbers. Ranges continued to improve by using the deferred rotational grazing system.



JOCKO RIVER, SHOWING FLOOD PROBLEM AREAS
AND CHANNEL CHANGES FROM 1955 to 1970

As a result of clipping studies conducted by Mel Morris of the University of Montana (see report on page 24) some interesting data was obtained. Data showed 566 pounds of grass per acre produced on Idaho fescue type and 1420 pounds per acre on rough fescue types. Total biomass, including all litter standing and dead and total live vegetation, revealed 2178 lbs/acre on Idaho fescue compared with 6187 lbs/acre on rough fescue sites. Clipping studies were accomplished in four acre enclosures constructed prior to the growing season. This indicates the tremendous potential of native vegetation.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

Whistling swans were observed only once during the year on the Bison Range, when two were noted at Ravalli ponds in early April.

The mid-winter waterfowl survey, conducted January 5, revealed two Canada geese, 910 Mallards, five Green-winged Teal, 75 Goldeneyes, and 30 Common Mergansers on Mission Creek and the Jocko River. A few more geese were noted the following week, bringing the total to approximately 30, which remained through the winter.

A few migrants were noted on Ravalli ponds in mid-March.

Geese along Mission Creek were on nests by late March and first broods were observed April 26. A minimum of five broods, totaling about 30 young were produced in the headquarters area.

Duck broods were seen at Ravalli ponds, headquarters display pool, and the elk pasture pond throughout the summer. Production was estimated at 80 Mallards, 10 Widgeon, 30 Blue-winged Teal and 30 Redheads.

Fall populations built to around two thousand Mallards along Mission Creek once hunting season got underway. By December however, numbers stood at 40 Canada geese, 630 Mallards, 5 Green-winged Teal, 75 Goldeneyes and 15 Common Mergansers.

2. Other Water Birds

Small numbers of Great Blue Herons were present along Mission Creek, Jocko River and Ravalli ponds throughout the year.

3. Shorebirds

Killdeer were seen as early as January 5, and were common over much of the range through spring and summer months. Common snipe

were heard winnowing in headquarters area all spring and summer. They were last seen along Mission Creek on December 3. Small numbers of Wilson's and Northern Phalaropes were noted at Ravalli ponds and Spotted Sandpipers were present in about normal small numbers.

4. Mourning Doves

First doves were observed in the vicinity of headquarters on April 8, about two weeks earlier than last year. Doves were, as usual, not numerous, but well distributed over most of the Range. Young were produced in the headquarters and slaughter-house areas as in past years. Total number using the Range is estimated to be less than 300 birds.

B. Upland Game Birds

Upland birds had a good year with possible exception of Chukar partridge.

Richardson blue grouse were seen in most higher portions of the Range. At least five broods, averaging 2.5 young, were recorded. One large group, totaling 19 birds was observed near High Point in late September. The year-end population is estimated at 70 birds.

Although Ruffed Grouse are known to inhabit both the Jocko River and Mission Creek bottoms, only one observation was made during the year. Drumming males were heard frequently along the Jocko, but none were actually seen.

The status of the Columbian Sharptailed Grouse on the Range is still largely unknown. A pair of birds was seen on two occasions in Alexander Basin during March, but no other observations were made this year.

Plans for further introductions have been temporarily stalled by a request from Idaho Fish and Game Department for a new agreement with the State of Montana. Both states had verbally agreed to exchange Sharptails for turkeys at a rate of five to one. Fifteen birds were trapped in 1969, but little has been seen of them since. We hope to acquire at least 75 to 100 birds during 1971 to insure a reasonable chance of a successful re-introduction.

Ring-necked Pheasant broods were recorded along Mission Creek and in the Pauline drainage, averaging 8.0 young per brood. Opening of Pheasant season produced the usual influx of several hundred birds into Mission Creek bottoms.

Chukar partridge are still at very low levels following severe losses during the '68-'69 winter. Only three broods were actually recorded compared to six last year. Chukars have done quite well

in the past building to populations of 200-300 birds, but a rough winter usually makes heavy inroads on them. At year's end the population was estimated to be 30.

Gray partridge are apparently extremely well suited to the Bison Range habitat and climate. They are seen in every part of the refuge from High Point to headquarters and seem to thrive in even the roughest of winters. Production was estimated at 800 young and the year-end population at 1200.

For the second year a single Turkey was seen roosting along Mission Creek near the refuge entrance.

C. Big-Game Animals

1. Bison

The Buffalo deferred-rotation grazing program was followed as scheduled for herd number one. One change was made in rotation of the smaller herd. This stemmed from changes made in 1969, which ~~was~~ are required to make animals available to the public during the summer tour season. In this case, grazing periods for the southwest and upper north ranges were switched.

The Sheep pasture was opened and grazed in conjuction with the upper south range during April-May and June in order to reduce pressure on the upper south. This, too, was a result of previous changes brought about by the need to have herds available along the tour route.

As mentioned in the 1969 report, the basic design of the rotation was such that once every four years both herds would be scheduled for ranges far from the public view. This occurred in 1969 and the rotation was altered to correct the problem. Of course, one change calls for another. Thus alterations in the schedule for 1970. One further change will be required in 1971 and both herds will be in a new rotation. This will always assure at least one group to be available for public viewing throughout the tour season.

Calves were first observed April 20, about the same time as in 1968, but almost two weeks later than last year. By the first of June there were 66 of these frisky, rust-colored critters in the herds. Round-up in October, produced a total of only 67 calves through the corrals. One calf was known to have died during the summer and apparently others were lost but not located as at least 69 were tallied in July. The initial calf crop was at least 72%, and the crop at round-up was 70% from 96 breeding age cows, the poorest in recent years. (see table below)

ANNUAL CALF PRODUCTION 1956 - 1970

15 Year Average - 88%

Year	Production	Year	Production
1956	92%	1964	94%
1957	84%	1965	94%
1958	95%	1966	85%
1959	90%	1967	85%
1960	80%	1968	85%
1961	94%	1969	95%
1962	84%	1970	70%
1963	91%		

There is no concrete evidence to explain the low calf crop, but Leptospirosis is suspected. The problem has been discussed with the local USDA Veterinarian and he explained "Lepto" will flare up occassionally, producing short calf crops, and then die down for a period of years. Since immunization from disease requires annual vaccination of all animals it is felt an occasional low calf crop must be accepted, rather than attempt the nearly impossible vaccination task. The calf sex ratio was nearly equal this year (34F:33M) for the first time in three years. The ratio was heavily slanted toward females in 1968 and 1969.

Annual roundup, held the first week in October, showed a total of 396 animals. At least three bulls escaped our efforts and remained on the range. Both herds were worked through the corrals separately, and bulls were again rotated from one herd to the other.

John Corcoran, DVM, and Bob Manlove, Livestock Inspector, both USDA officials, again accomplished the brucellosis and pasteurella vaccination and ear-tattooing. Thirty-four heifer calves were "Bangs" vaccinated, and all calves received pasteurella shots. All were branded with "O" on the upper left hip, and tattooed with "V-O" inside the left ear. The year brand was moved from the lower hip to the top of the rump this year to facilitate brand reading. Animals are worked from ramps so reading brands is an annual problem. Eighty live-sale animals were ear and back tagged for ease of sorting and handling.

Range herd #1, totaling 195 animals, was released in the northside range and herd #2 with 113 head, was turned into the southwest range. The display herd at headquarters numbers five animals. Sex ratio of the herd is 84M:100F, a total of 103 breeding age cows were returned to the range.

Known herd losses this year totalled eight animals. Two bulls, five and 14 years of age, were killed because of injuries. Meat was donated to local schools. A 10 year old bull with a suspected pasteurella infection was killed, the meat was not useable. Bulls of three, nine and ten years were found dead, probably from fighting. One calf was found dead, and a blind calf with an infected mouth, caused from injuries received in the corral, was destroyed after round-up.

The following table presents herd composition data at the end of the year:

BISON HERD COMPOSITION, DECEMBER 31, 1970

Age Groups	Male	Female	Total	Animal Units
Calf	33	32	65	19.5
Yearling	23	33	56	35.9
2	19	17	36	32.6
3	13	11	24	26.8
4	7	13	20	21.5
5	13	7	20	27.1
6	15	19	34	44.5
7	9	11	20	26.3
8	2	8	10	11.4
9	2	5	7	8.6
10	4	3	7	10.2
11	1	5	6	6.8
12	0	2	2	2.0
13	0	2	2	2.0
14	1	0	1	1.8
15	0	3	3	3.0
16	0	1	1	1.0
Totals	142	173	314	281.0

Note: Animal units are based on average weights of each age and sex class, with one animal unit being equal to a 1000 pound animal.

2. Elk

Elk population data was somewhat puzzling this year to say the least! Last year's data showed the herd numbered 53 head on December 31, but highest count obtained in 1970 was only 39, including seven new calves. During the annual big game count in March, 34 head were accounted for, but observers stated they were

sure other animals got past them without being seen. During late summer and early fall it appeared one cow-calf herd was being missed consistently. Two possibilities present themselves : 1. Part of the herd escaped the refuge, or 2. The two main cow-calf herds were using over-lapping portions of the range and we were only seeing one group at a time. We suspect the latter is the case since small composition changes were noted. Another group of approximately the same number would bring the total to what it should be. Since no acceptable census could be obtained no disposal was conducted this year. Two adult bulls were collected for research on rumen digestion conducted by Dr. Oh and Mr. Guy Connolly. (See research Section)

Herd data observed was as follows: total cows: calves, 100:46; herd sex ratio 100F:90M.

Again several adult bulls spent most of the summer along Mission Creek, much to the delight of the visiting public. During the rut they moved up to the elk display pasture area, challenging the display bulls and fighting with them through the fence. Their ability to reshape and modify a woven-wire fence is nothing short of spectacular.

One calf was added to the display herd this year, bringing the total to six animals. One of the adult cows in the display pasture was used in a preliminary telemetry study conducted by N.A.S.A., the Smithsonian Institution, and the Montana Cooperative Wildlife Research Unit. (See Research Section)

3. Mule Deer

The Mule deer population was estimated at 217 animals at the first of the year. The annual big game count in March produced an actual count of 239 so that figure was adopted for reporting purposes. Three composition counts were conducted to determine surplus and set disposal quotas. Known natural losses were seven, including three semi-tame animals brought in by Montana Fish and Game. Herd composition and disposal data are summarized in the following table:

MULE DEER HERD COMPOSITION & DISPOSAL-1970

Sex & Age	Pre-Disposal	Disposal	Balance
Adult bucks	57	14	43
Yearling bucks	50	21	29
Adult does	81	37	44
Yearling does	50	18	32
Fawns	81		81
Total	319	90	229

The observed adult doe: fawn ratio was 100:100 and total doe: fawn ratio was 100:62. Adult portion of the post-disposal consisted of 49% males and 51% females. End of year population was estimated at 229.

4. White-tailed Deer

White-tailed Deer were "guesstimated" at 189 animals on January 1, 1970. The annual count in March, however, totalled only 108 head and a compromise figure of 150 was adopted. Bison Range White-tails present usual census problems associated with the species, so data are always somewhat in doubt. Last year's composition counts showed a very high doe: fawn ratio which probably led to an over estimate of total numbers. Samples were likely not representative, but estimates must be based on what is seen and not just on what is thought or desired.

Only three animals were known to be lost, including one orphan fawn brought in by Montana Fish and Game. Herd composition counts were made three times during late summer and early fall to set disposal quota. Composition and disposal data are summarized in the following table:

WHITETAIL HERD COMPOSITION & DISPOSAL-1970

Sex & Age	Predisposal	Disposal	Balance
Adult bucks	56	21	35
Yearling bucks	21	9	12
Adult does	53	10	43
Yearling does	21	9	12
Fawns	67	3	64
Totals	218	52	166

Adult doe: fawn ratio was 100:126 and total doe: fawn ratio was 100:91. The Adult portion of the post-disposal herd consisted of 46% males and 54% females. The end of the year population including orphan fawns brought in, was estimated at 168.

5. Bighorn Sheep

The Sheep herd was swelled again by 10 new lambs, the same production noted last year. Four animals were removed for research projects. One 7 year old ewe was collected because of obvious poor condition and sent to the laboratory for disease analysis (see disease section.) Two adult rams were taken for Dr. Oh and Mr. Connolly and one yearling ram was immobilized and transferred to the Utah State Coop. Wildlife Research Unit. This left 48 animals on the range at year's end. The observed sex ratio was 100F: 105M.

Considerable difficulty was experienced in immobilizing the ram for the Utah State Unit. Although "tried and proven" dosages, recommended by an acknowledged expert, were used, several adult rams failed to yield to the drugs. Dosages were recommended by John Stelfox, of the Canadian Wildlife Service, who has had many years experience with immobilants and Bighorn sheep. Dr. Bart O'Gara, of the Montana Coop Unit, administered drugs, starting with 90mg. of Succostrin (succinylcholine chloride.) At least three adult rams received this dose with little reaction other than a certain amount of hyperventilation after about 10 minutes. Dosage was increased to 95 and 100mg. without success. Sernylan at 115mg. was tried, producing some slight staggering in adult rams after 5 to 10 minutes. This dose finally put a yearling ram down long enough to be hog-tied and blindfolded. He was packed off the mountain and placed in a transportation crate with no difficulty. He was on his feet ten minutes later. We might add, these dosages were considered extremely heavy by Dr. O'Gara, but he felt the rutting activity had the rams" cholinesterase level so high they were conteracting the drugs.

We believe little trouble would have been encountered in this project if we could have somehow, communicated with these rams to let them know 30 ewes were waiting patiently at Utah State facilities for some male companionship!

6. Antelope

The Pronghorn herd numbered 114 in January. An excellent crop of 62 fawns was dropped, but fawn mortality was very high. By the end of July only 30 fawns were observed, on September 1, there were 22, and by mid-October only 21 survived. "Susie" the pet doe in the display pasture failed to fawn this year, though we are certain she was bred.

Dave Kitchen, Ph.D. student from University of Michigan, was practically living with them while doing his behavior research, (see research section) and he was never able to find a carcass or sick animal. No explanation for the loss can be offered since no evidence has been found. Contacts with Dr. O'Gara and other antelope authorities in the state indicate this situation is not unusual. The same thing was experienced this year in a few herds in Eastern Montana. It has also been observed in the past.

Other known losses include two bucks collected for Dr. John Oh and Mr. Connolly's research, two bucks found dead, apparently winter

losses, and one buck found dead from fighting injuries.

The population stood at 130 head at years end. Composition of the herd after losses was 55 bucks, 54 does and 21 fawns.

7. Rocky Mountain Goat

The goat population increased with new kids to 15 head. One nanny and one billy were collected for Dr. Oh and Mr. Connolly leaving 13 animals at the end of the year.

8. Longhorn Steers

The Texas Longhorn "herd" remains at two very fat individuals.

9. Black Bear

A sow and two cubs were seen in Elk Creek in early June. In September another group of the same composition was observed in lower Pauline Creek, approximately four miles from the first sighting. In 1969 at least two adult animals were sighted, so the two observations this year may be of different animals.

D. Fur Animals, Predators, Rodents and other Mammals

Coyotes have again become a common sight on the Range and observations were made in nearly all parts of the refuge throughout the year.

One adult Bobcat was observed on Wildhorse Mesa in September and a single Kitten was seen near the east boundary on the same day.

Badger, skunks, and Long-tailed weasels were observed on several occasions.

Porcupines were abundant, as usual. Some damage to trees was not noted.

Columbian ground squirrels were first observed in the display pastures on March 12, about a week earlier than last year. The wood pile on the north of Mission Creek again held a sizeable colony of Yellow-bellied marmots. A few of these chunky rodents took up residence under the old cow barn, but evaded our efforts to live-trap and transplant them.

Mountain Vole populations continued at the exceptionally high levels of 1969 until early June when they suddenly took a nose-dive. Few mice were noted after that time. The I.B.P. small

mammal team experienced difficulty in obtaining samples when they arrived. (See research section)

No predator or rodent control was conducted, except for normal small numbers of feral house cats and problem dogs.

E. Hawks, Eagles, Owls, Ravens, Magpies

Hawk observations were much the same as past years with exception of a Pigeon Hawk seen in Trisky Creek in late March. Up to 15 or 20 Rough-legged Hawks were commonly noted during winter months. Red-tails were first noted March 7, nearly a month earlier than last year. A single Cooper's Hawk was seen at headquarters in February. Sparrow Hawks seemed lower in numbers compared to 1969, some reproduction was noted.

Golden Eagles were seen year around with a peak of at least five noted in late September. No nests were located but we are reasonably certain nesting occurs on the Range.

Short-eared owls were relatively low compared to past years. Five were noted in Mid-January, but few were seen the rest of the year. One Long-eared owl was observed near Indian Springs in March, and an occasional Great Horned Owl was seen near headquarters during the summer.

Ravens and crows were seen in small groups, particularly in early spring and Magpies were common year-round residents.

F. Other Birds

No new species were recorded during the year, but avid birders were never disappointed with the variety offered. The usual large compliment of warblers, towhees, wrens, and various sparrows were present along many small creeks and brushy areas of the Range. In late March a very large group (several hundred) of Mountain Bluebirds was noted in the Slaughterhouse area. Headquarters had its usual large concentration of nesting species.

G. Fish

Trout fishing along the Jocko River was generally good, although occasional periods of roily water made it tough on, the died-in-the-wool, fly fishermen. Several three to five pound fish were reported, generally by bait fishermen.

H. Reptiles and Amphibians

Western rattlesnakes were observed on many occasions over most of the Range. One Rocky Mountain Rubber Boa was seen near Tower

Three, and a few Bull snakes were also recorded. Painted turtles were numerous in the Elk Pasture pond and headquarters display pool. One long-toed Salamander was found in a window-well at headquarters.

I. Diseases

A ten year old bull bison crippled with severely swollen joints, was disposed of in September. Pasteurella multocida infection was suspected, but laboratory tests were inconclusive. The meat was condemmed as a precaution against the possibility of Pasteurella.

Many live-sale bison were tested for Brucellosis and Tuberculosis. All results were negative.

Blood samples of deer and elk taken during annual disposal, were analyzed for Brucellosis, Leptospirosis and Anaplasmosis. All samples tested negative.

A mule deer fawn, brought in by Montana Fish and Game Department personnel, developed a peculiar staggering illness and was finally destroyed and sent in by the local veteranarian for testing. Apparently the specimen did not arrive in good enough condition for tests to be completed. A Whitetail fawn developed similar, though not as severe, symptoms and was successfully treated with antibiotics.

During the annual big game count a ewe Bighorn sheep in extremely poor condition was observed. It was subsequently collected and sent to the Bozeman Laboratory for autopsy and disease analysis. Laboratory reports indicated the animal carried a heavy load of internal and external parasites, including ticks, lice, nematodes, whip, and nodular worms, tapeworm cysts, and lungworm larvae. Skeletal inspection showed a broken but mended lumbar vetebrae; broken, deformed pelvic girdle; three broken ribs; numerous calcium deposits in several areas and several porcupine quills lodged in the right leg against the bones. Otherwise it was O.K.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Refuge Work Program

a. Fence Construction and Repair

Two miles of Elk Creek fence, entending from the sheep pasture to the south boundary was rebuilt. The 55" wire was

salvaged and re-used so it conforms with our latest design of interior or Antelope type fence.

The division fence from High Point east, was relocated through the head of Trisky Creek and down Turkey Woman draw to the boundary. This will make it less visible from the tour road and eliminate damage from drifting snow encountered in past years. A total of 1.6 miles of fence was involved. The old interior fence must be removed to complete this project.

Three cattle guards on the tour route were widened by adding an additional 8' guards at each installation. Special end wings were constructed and tied into the fences. So far this has eliminated buffalo jumping these guards.

Bison Corrals were improved by additional cat-walks, piping water to each holding pen and lining the pipe corrals with plywood to prevent animals from injuring themselves in these pens.

A number of high quality juniper fence posts were salvaged from dead and down juniper trees in Mission Creek bottoms.

All interior fencing was inspected and repairs made as required. The Boundary fence was also inspected and routine maintenance performed.

b. Roads and Bridges

The boundary road was bladed twice this year. Additional blading was necessary in late summer due to extensive weed growth following initial work.

A total of 256 cubic yards of crushed gravel was hauled from the Bureau Crusher and spread on the tour road in lower Pauline Creek. This road has now received crushed gravel from headquarters to the cattle guard midway up Pauline Creek for a total distance of 2.8 miles.

The tour road was bladed once, and two additional trips were made with the rock rake. It was kept in good condition through out the tour season.

An additional coat of oil and 5/8" chips was applied on the Exhibition Pasture tour road. Chips were crushed by the Bureau crusher and spread by the Lake County road maintenance crew. An additional 1500 gallons of oil was used to patch shoulders and coat turnouts. Total cost of the job was $1,328.

The Bureau rock crusher was intermittently operated when time and weather permitted. Approximately 1700 cubic yards

were crushed, the bulk of which remains in a stockpile for future use on the refuge tour road.

c. Building Maintenance

Building #26: Exterior walls of the Slaughter house were covered with white 26 guage baked-enamel steel siding. The edging, trim flushing are colored green. The job was contrasted by Northern Builder's Exchange for $1725.48. In addition the small apartment in this building was improved by paneling walls, sheeting the ceiling and painting.

Building #11: The exterior walls of the horse barn was covered with 26 guage galvanized steel siding, colored white. Corners, edgings and flashings were dark green to conform with adjacent buildings. This job was accomplished under contract, by Bryant Builders at a cost of $2037.20.

Building #72: Old shingles of this building were removed and replaced with new stick tab asbestos shingles.

Building #4: Major renovation of the office interior was completed. The front and middle offices were combined into one room by removal of a wall. The front portion is now utilized for displays, photos etc. for the visiting public. The clerk occupies the back portion making her available for reception and information. The small apartment in the rear of the building was remodeled and is used as office for the manager and assistant manager. This job consisted of paneling the walls, installing ceiling tile, replacing windows, doors, lighting fixtures and covering the floors with commercial carpet. Exterior stucco walls were painted with white cement paint.

Buildings #15-16-18-20: Metal roofs of each of these buildings were cleaned of loose material and dark green fiberglass texture paint applied. This job was accomplished under contract.

Building #19: A new 125,000 B.T.U. forced air oil furnace was installed in the automotive and carpenter shop.

Quarters #63: A new formica counter top was installed in the kitchen.

d. Automotive Equipment Maintenance

Major repair and maintenance work accomplished included; engine overhaul on the rock crusher, rebuilt jaws on crusher, complete overhaul of fire pump engine, installed power hydraulic system on the rock rake, rebuilt bucket on back hoe, overhauled front differential on pickup I-75650, installed protective cab on

TD18A tractor dozer. Necessary minor repairs and 5,000 mile preventative maintenance check were performed as required.

e. Miscellaneous

Fifty-nine picnic tables were moved into the shop, sanded, and given a coat of penta-base redwood stain, and stored in the picnic shelter for the winter.

A small parking area and interpretive stop was developed near the display pond. This will be the take off point for a wildlife interpretive trail that will follow around the display pond and along lower Mission Creek. The trail was trenched, lined with plastic to prevent weed growth, and filled with reject gravel. Piling was driven for two foot bridges on the trail. This project is approximately 75% complete.

During the spring run off, a large drift formed in the Jocko River near the refuge boundary. This caused considerable cutting of the bank and threatened to cut through on to adjoining private property. A jetty was constructed, and the danger spot rip-rapped. This involved hauling 156 cubic yards of rock and placing it along the bank.

A considerable number of existing signs were refinished and new signs constructed.

A total of 39 tons of hay was harvested from headquarter's meadows and exhibition pasture, and stored in the horse barn.

A total of 550 bushels of barley was hauled from the Kootenai Refuge and stored for winter feeding and banding at the Bison Range, Ninepipe, Pablo Refuges.

B. Plantings

1. Trees and Shrubs

None.

2. Upland Herbaceous Plants

The annual accumulation of barnyard manure and spoiled hay was used to mulch approximately four acres of bare spots east of headquarters. These areas were seeded four pounds per acre, with a mixture of Western wheat and Alta fescue.

C. Collections and Receipts

1. Seed and Other Propagules

Two hundred pounds each of Timothy, Yellow Sunset Clover were received from Kootenai Refuge.

2. Specimens

The following Specimens were all preserved for addition to the refuge collection:

Species	Number	Type
Whistling Swan	1	Frozen
Willet	1	Frozen
Sand Hill Crane	1	Frozen

The Sand Hill Crane was found dead. The Willet and Whistling Swan were seized as evidence during enforcement work.

D. Control of Vegetation

1. Biological Control

Goat weed beetle, Chrysolina quadrigemina, remained widely distributed, in very limited numbers. No significant plant control by beetles was noted.

2. Chemical Control

Aerial spraying to control goatweed was continued. A total of 1569 acres in the Upper North range, Antelope Ridge, and switchbacks were treated with a 2,4-D Amine, water mix, applied @2 pounds acid equivalent per acre. Apparent kill was quite high, but a further check next Spring will confirm the results.

Canada thistle control was continued, using ground spray equipment. Areas of high infestations along roadsides, canal banks, horse pasture and picnic area were treated with 1:100 mix of 2,4-D Amine and water, applied @2 pounds acid equivalent per acre. Initial results appeared good.

E. Planned Burning

None

F. Fires

None

IV. RESOURCE MANAGEMENT

A. Surplus Buffalo Disposal

1. Live Disposal

Eighty animals were sold alive on the basis of a sealed, competitive bid sale. Thirty-seven bids were received, with the bid awards going to twenty-one buyers for a total of $27,501.78, or an average of $343.77 per animal, as summarized below:

Number	Age Group	Total Bids	Ave./Animal
38	Yearlings	$11,553.90	$304.05
18	Two-year old	6,610.76	367.26
5	Three-year old	2,007.11	401.42
2	Four-year old	725.00	362.50
7	Six-year old	2,902.33	414.61
1	Seven-year old	427.11	427.11
2	Eight-year old	854.22	427.11
3	Eight-plus cows	1,128.33	376.11
4	Eight-plus bulls	1,293.02	323.25
Total		$27,501.78	$343.77

Buyers names and the number of animals they purchased follows:

South Everett Lion's Club Everett, Wash.	1	Darrel Shulsen Sandy, Utah		Jack Boyd Columbia Falls, Mt.	1
Gary Kruger Dillon, Mt.	1	G.Marion Hinkley Provo, Utah	2	Emmett Burley Spokane, Wash.	2
Harold Wright Heppner, Oregon	9	James Burnett Luther, Mt.	2	Paul Piper Blue Earth, Minn.	2
Ronald Gregory Longmont, Colo.	26	R.C.Keyser, MVD Ronan, Mt.	1	Leavenworth Sportsmen's Club Leavenworth, Wash.	1
Paul Greig Medical Lake, Wash.	2	Peter Redhorn Browning, Mt.	4	Jack Hash Roscoe, Mt.	2
William Becker Santa Barbara, Calif.	3	Robert Schall Arlee, Mt.	16	Lewistown Lion's Club Lewistown, Mt.	1
Wade Kinchloe Melstone, Mt.	1	Fred Gillard Ravalli, Mt.	1	Roy Curtis Vaughn, Mt.	1

The live sale was again sucessful and the only animals butchered were those taken for humane reasons. Meat collected from these animals was donated to local schools for use in their hot-lunch programs.

2. Sale and Donation of Hides and Skulls

Five hides and one head with hide (skinned for mount,) from the 1969 disposal program were sold. The head for mounting, an eleven-year old bull, brought $201. Parts of bison skeletons were donated to John Summers, National Retesting Station, Idaho Falls, Idaho, vertebrae were donated to Western High School, Anaheim, California, and skeletons, skulls, hides, and hoofs were set aside for later pick up by school science departments.

B. Surplus Elk and Deer Disposal

1. Meat Disposal

One elk and 140 deer taken during the fall disposal were distributed to Montana schools for use in their hot-lunch program. One elk was again sold to the Lake County 4-H Council Junior Fair, in accordance with prior authorization. A handling charge of 15¢ per pound of dressed meat was charged to help defray collection costs. Estimated comparative annual costs for this program are summarized below:

Disposal cost -per animal		$26.33
Revenue - meat-per animal	$14.62	
Revenue - hides & antlers	3.52	
		18.14
		-$ 8.19

C. Proceeds of Sales

Total receipts and number of sale items for the year 1970 were as follows:

	Number	Amount
Live buffalo	80	$27,501.78
Deer and elk meat	13,644 Lbs.	2,046.60
Buffalo hides	5	138.00
Elk hides	11	67.50
Deer hides	126	420.00
Antlers	54	211.50
Bull buffalo head for mounting	1	201.00
Bull elk heads for mounting	2	155.00
Antelope hide	1	25.00
Texas Longhorn steer hides	2	20.00
Whitetailed deer tails	46	23.50
Employee's horse grazing fees and hay		88.00
Refuge wood	6 cord	42.00
Marsh concession		675.77
Sale of surplus property		30.51
Total Receipts		$31,434.69

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Bison Age-Weight and Longevity-Refuge Personnel

Most of the buffalo were weighted during roundup to obtain data for comparison with previous years. Weights are summarized in the following table:

AGE	SEX	NUMBER WEIGHED	AVERAGE WEIGHT	EXTREMES LARGEST	EXTREMES SMALLEST
Calf	M	33	313	410	150
	F	31	302	385	150
1½	M	21	666	770	525
	F	24	577	665	420
2½	M	21	1018	1255	820
	F	18	846	915	755
3½	M	7	1176	1380	1045
	F	8	916	1000	785
4½	M	6	1502	1665	1420
	F	13	922	990	815
5½	M	12	1592	1900	1370
	F	6	1008	1115	895
6½	M	15	1651	1775	1480
	F	16	960	1070	810
7½	M	9	1746	1890	1610
	F	12	958	1080	855
8½	M	1	1800	——	---
	F	7	951	1020	860
9½	M	3	1862	1960	1800
	F	5	958	1000	895
10+	M	5	1729	1910	1635
	F	15	1049	1205	970

The above data is included here merely for the record as comparisons with earlier data show little except weights are highly variable within age classes. We were hoping the weights would reflect improving range condition trend, however changes, if any, are subtle, inconsistent, probably insignificant.

B. Range Condition and Trend-Refuge personnel

Two additional Parker 3-Step transect clusters were established, bringing the total to 23. Plans call for at least three clusters in each range unit, to be read on a four year cycle.

C. Waterfowl Banding-Refuge personnel

Post season banding at Bison Range headquarters was conducted

In January and February utilizing the recoilless rock net. A total of 259 Mallards and seven Canada geese were banded at a cost of $1.15 per bird. An additional 44 returns and four foreign retraps were handled.

Preseason banding attempts were unsuccessful. Very few Mallards were in the area prior to hunting season and none were attracted to the baits.

D. Social Behavior in Bison NBR-4-Dr. Lott

Dr. Lott again worked on the Range during rutting season and prepared the following report on his progress:

"This summer two aspects of bison behavior were studied. Analysis was begun of the form and stability of dominance hierarchies amont mature males in a herd during the breeding season. The data indicate that there is a relatively stable dominance hierarchy between individual pairs of males, but this does not result in a linear hieraichy among all males in the group. There was clear evidence of the existence of six triangular dominance hierarchies.

The second major emphasis was a continuation of studies of the relationship between estrus and the attractiveness of females to males. This year's study, like last years', revealed that there is a marked variation in the attractiveness of females, which is often but not always, related to their estrus cycle."

E. Behavior Patterns of American Bison Calves at the National Bison Range-NBR-6-Engelhard

Mr. Engelhard's thesis was finally completed and received this year. The abstract is included here although the study was done in 1967.

ABSTRACT

A field study of the behavior of Bison Bison calves was made at the National Bison Range in Montana during the 1967 spring calving and through the summer rut. Since no previous behavioral studies of this herd had been accomplished, an effort was made to determine similarities and differences between their patterns and those of other herds under different management and ecological situations.

Observations were made of 90 calves born into a herd which demonstrated conspecific as well as interspecific influences. A major problem was obtaining close observations of the early life on the calves. Cows that were about to calve were extremely wary; in time, as their calves gained independence and social integration, however, the herds were more readily approached. Shortly after birth the young showed behavior that was related mostly to its own growth;

but as peer relationships developed and the herd responded to seasonal changes, these factors had greater influence on the calf. Parturition most often occurred while the cow was within the group. Only a few cows left the herd immediately afterward but all appeared to go through an intimate relationship (bonding period) with their young.

Development of calves was considered in the following periods: first day, first week, first month, three months and weaning time. During the bonding period the young became aware of their environment and by the fourth week joined a peer group and spent time apart from the dam. By the third month, the rut had begun; bulls courting cows unintentionally contributed to the weaning. Calves imitated adult actions, and their unborn behavior was continually modified by social behavior of the herd. Most were weaned before they were yearlings though some year-old individuals continued to suckle.

Accounts are included of two unusual situations: the behavior of twin calves, and the involuntary fostering of a stray calf by a cow that already had a calf of her own.

F. A Study of the Social Behavior of the Pronghorn Antelope-NBR-9
David Kitchen

The purpose of the study is to describe and analyze social behavior of the pronghorn antelope, and its relationship to other animals on the range. Work is being done by Dave Kitchen in fulfillment of Ph.D. requirements for the University of Michigan.

Dave Kitchen returned to the Bison Range in early May and plans to stay until his field work is completed this summer. He had accumulated 876 hours of actual behavioral observation as of November 1, 1970. Fourty-four behavioral acts have been described, and the variations and temporal patterns have been followed through over 1200 interaction sequences.

A copy of his second progress report is included at the end of this report.

G. A Study of the abundance and Distribution of Rodents in Relation to Vegetative Distribution of Rodents in Relation to Vegetative Types on the National Bison Range-NBR-11 -Mel Morris

The objective of this study are:

(1) To determine species and density (number) per acre of mice and pocket gophers by major grassland types (five types).

(2) To determine species and density per acre on paired excellent condition range and weedy types for each of the five major grassland types.

(3) To determine species and density of paired weedy types as is, and with litter removed.

Field work was carried out by Jerry Hagen during the summer of 1969 and results are summarized in the table on the following page. No field work was done in 1970 because of the I.B.P. project.

BISON RANGE RODENT STUDY-SUMMARY; 1969

AREA	LOCATION	DATE	TRAP DAYS	VEGETATION TYPES					
				Rough Fescue	Idaho Fescue	Three Awn	Western Wheat Grass	Cheat Grass	Weed
2	Headquarters	7/14-7/18	496	16	36		23		
4a	Pauline Creek	8/10-8/14	98	7	19+1*				
4b	Pauline Creek	8/10-8/14	98		6			8	
5	Slaughter House West	8/20-8/25	98		6	0			
6	Slaughter House East	8/26-8/31	98		2+1*	0			
7	Snake Pit	10/3-10/6	98	3+1*		1+1*			
8	Pauline Creek	9/7-9/12	98			1			5+2

* First number is for Microtus montanus, second number for Peramyscus maniculatus

Field work - Jerry Hagen
Compiled by - M. S. Morris

NATIONAL BISON RANGE IBP-US GRASSLAND BIOME

1970

Date	Rough Fescue Stand			Idaho Fescue-Bluebunch Stand		
	Grasses	Forbs	Total	Grasses	Forbs	Total
	Grams/sq. m.*			Grams/sq. m.		
4/15	7.36	1.04	8.41	5.56	1.42	6.98
5/2	16.93	10.49	27.42	17.54	14.52	32.06
5/16	37.39	14.39	51.78	31.05	15.73	46.78
5/30	77.50	39.74	117.24	47.92	47.83	95.75
6/17	115.78	70.83	185.63	58.50	39.28	98.17
7/2	159.20	69.52	227.85	63.44	45.33	109.69
7/16	124.72	56.80	181.60	62.16	31.48	93.64
8/4	148.20	43.16	191.36	74.36	29.75	102.44
8/25	111.33	27.74	139.07	65.85	17.51	83.36

* oven dry wt.

Rough fescue stand represents a climax stand. The Idaho fescue-bluebunch wheatgrass stand is a stand resulting from past close grazing. Sites are not fully equivalent but approximate it. To convert to pounds per acre multiply by 9. This table is not for distribution.

M.S.Morris
University of Montana

Table Soil moisture conditions for the growing season at the location with moderately close grazing history. Soil moisture determined gravimetrically. Values underscored have available soil moisture (above - 15 bars).

Soil Depth	Grazing History - Moderately Close Grazing													
	4/12	4/25	5/17	5/30	6/16	7/3	7/16	7/30	8/6	8/21	8/27	9/17	10/1	10/22
cm	Percent													
0- 5	32.9	39.9	40.5	31.3	28.2	18.2	17.7	22.4	15.1	8.1	6.0	15.9	11.9	28.2
5- 10	29.6	33.4	35.0	30.3	25.6	17.0	13.5	17.7	14.1	7.3	8.2	10.6	9.9	27.8
10- 20	25.7	39.2	39.4	31.5	23.2	15.1	10.4	15.5	13.2	6.8	7.1	10.4	8.0	20.5
20- 30	27.9	39.3	36.4	30.0	22.1	12.9	9.9	9.2	11.8	9.2	7.1	6.4	7.6	8.9
30- 40	18.5	22.6	27.8	22.2	16.9	12.9	9.9	8.2	12.2	9.5	6.0	5.5	6.7	5.4
40- 50	17.9	27.7	28.2	24.7	16.6	15.0	14.0	15.6	13.1	10.7	8.1	4.9	5.2	5.4
50- 60	16.2	26.9	29.1	26.1	20.9	19.4	11.7		11.1	9.4	6.9	5.3		
60- 70	14.1	20.4	22.5	24.2	17.3					7.1	7.1	5.9		
70- 80	9.9											6.1		
80- 90	7.4													
90-100	8.5													

Table . Seasonal trends of various components of above ground biomass for two locations in Fescue grassland with corresponding grazing histories (Treatment 1 - light to no grazing and treatment 2- moderately close grazing). 1970 growing season. Yields in gms per sq. m.

Biomass Component	Grazing History - Light to none										
	4/15	5/2	5/16	5/30	6/17	7/2	7/16	8/4	8/25	9/26	10/31
	-Gms/m2-										
Standing Live	8.41	27.42	51.78	117.24	185.63	219.02	168.24	161.03	60.82	27.69	25.95
Standing Dead,1970	0.00	0.00	0.00	0.00	0.00	9.10	13.34	30.87	78.83	95.37	124.89
Standing Dead,1969	153.05	140.50	130.73	137.60	91.25	106.63	39.14	46.45	31.53	11.42	0.00
Litter	175.00	180.49	123.67	182.12	146.91	220.30	273.91	329.36	334.57	308.60	243.40
Total	336.46	348.41	306.18	436.96	423.79	555.05	494.63	567.71	505.75	443.08	394.24

Biomass Component	Grazing History - Moderately Close										
	4/15	5/2	5/16	5/30	6/17	7/2	7/16	8/4	8/25	9/26	10/31
	Gm /m2-										
Standing Live	6.98	32.06	46.78	95.75	98.17	97.50	82.14	81.76	43.17	43.29	16.68
Standing Dead,1970	0.00	0.00	0.00	0.00	0.00	12.19	11.50	20.68	40.19	39.01	61.14
Standing Dead,1969	56.80	66.89	47.69	62.41	48.52	36.56	20.27	22.82	12.22	1.13	
Litter	55.19	44.79	36.91	26.56	35.92	50.80	73.05	55.51			
Total	118.97	143.74	131.38	184.72	182.61	197.05	186.96	180.77			

Table Soil moisture conditions for the 1970 growing season at the location with light to no grazing soil moisture determined gravimetrically. Values underscored have available soil moisture (above -15 bars).

Soil Depth	Grazing History - Light to None												
	4/25	5/17	5/30	6/16	7/3	7/16	7/30	8/6	8/21	8/27	9/17	10/1	10/22
cm	Percent												
0- 5	49.3	55.1	38.0	33.3	26.5	23.0	19.3	14.1	7.4	3.7	16.2	13.7	25.5
5- 10	40.4	43.9	32.4	29.8	22.8	18.6	12.3	9.4	8.1	5.9	10.7	8.6	23.5
10- 20	40.3	44.9	33.8	29.5	23.4	14.0	10.4	9.9	8.0	5.8	7.6	6.8	22.6
20- 30	43.1	43.7	33.8	29.4	21.9	12.7	9.3	9.1	7.5	7.1	7.2	6.0	18.2
30- 40	37.3	36.7	31.8	27.4	20.0	10.4	8.4	7.7	6.4	5.6	6.2	4.1	6.9
40- 50	32.1	26.3	23.2	22.5	12.5	7.7	6.3	5.1	3.6	3.4	4.9	3.1	3.9
50- 60	23.0	19.7	16.4	16.9	11.8	5.6	3.9	4.5	4.2	3.9	3.4	3.6	3.4
60- 70	17.0	11.1	10.3	16.4	9.0	4.9	4.0	3.8	4.6	4.3	3.7	3.7	3.9
70- 80	9.5	9.9	7.5	8.9	8.4	4.7	4.5	3.9	4.2	4.7	4.1		4.1
80- 90	9.0			10.1	11.4	5.5	5.3	4.8	4.3	4.4	4.2		4.8
90-100	8.8					5.6	5.7	5.1	4.9	5.2	4.9		6.4

I. Habitat Segregating Mechanisms in Sympatric Populations of Microtus Pennsylvanicus and Microtus Montanus in Western Montana NBR-13-Frank Graves Jr.

This study is being conducted by Mr. Frank Graves, Master's student at the University of Montana. His purpose is to determine niche relationships between coexisting populations of Microtus Pennsylvanicus and M. Montanus.

Mr. Graves did not start his work until this fall and spent most of his time designing his equipment and making initial field tests. He plans to get underway again this coming Spring.

J. Ruminant Digestion Processes of Big Game Animals on the National Bison Range- Dr. Oh and Guy Connolly.

Dr. John Oh and Guy Connolly of the University of California, Hopland Field Station, Hopland, California visited the Bison Range during November 2-10, 1970 to study ruminant digestion processes in antelope, mule deer, white-tailed deer, elk, bighorn sheep, and mountain goat. These animals depend upon symbiotic microorganisms in the rumen and hind-gut for the digestion of their forage, just as domestic livestock do. Although domestic animals have been studied extensively, little is known about these microbial fermentation processes in wild ruminants. Oh and Connolly measured the basic fermentation rates in the rumen and hindgut (caecum) of two animals of each species listed above (only 1 mountain goat). The fermentability of representative samples of range grasses, forbs, and browse by rumen microbes from each animal was also studied, and food habits will be determined by examination of rumen samples from each animal. The Bison Range was an ideal site for these comparative studies because of the large variety of wild ruminant species utilizing the range in comman. It is hoped that these studies will help to explain the differences in food habits and animal performance among big game species, and contribute to a better understanding of big game forage requirements.

In their field work at the Bison Range, Connolly and Oh were assisted by the refuge staff, Bart O'Gara of the Montana Cooperative Wildlife Research Unit, and Melvin S. Morris of the University of Montana School of Forestry. Connolly served as student trainee at the Bison Range in 1959 and 1960.

K. Animal Tracking from Satellites--NASA-Smithsonian

This project, started during the spring of 1969, and was terminated in February of this year. The objective was to test

a radio-instrument collar on one of the Bison Range display elk in order to work out problems prior to placing the collar on a free-roaming animal.

Most of the activity during 1969 involved various experimental "dummy" collars to determine their effect on the animal and their durability. On January 22, 1970, however, the refuge was invaded by a small army of N.A.S.A., Smithsonian Institution, and Montana Coop. Wildlife Research Unit technicians with the operational collar.

The cow elk was immobilized with M-99 and the crew moved in rapidly, placed the collar on the animal with practiced speed, and the antagonist drug was administered. The elk was on her feet in a few minutes, and the collar was monitored with ground based equipment. About an hour later the Nimbus-3 weather satellite passed over and triggered the collar, monitored its' signal and passed the information to a ground station in Alaska. The N.A.S.A. people made a telephone call to Goddard Space Flight Center in Maryland and received the information relayed from the Satellite. They were able to determine the elks location, skin temperature, altitude above sea level and the ambient temperature.

The collar was removed in February and placed on a free-roaming elk at the National Elk Refuge at Jackson, Wyoming. Newspaper accounts told, the collar ceased operating sometime last summer. The animal was shot during hunting season this fall and the collar was recovered.

VI. PUBLIC RELATIONS

A. Recreational Uses

Public use of the refuge increased nearly 16% this year, from 79,400 to 91,730 actual visits. The period from May through September accounted for 70% of the total, or 64,005 visitors. The 19 mile self-guided tour route drew 38,925 visitors or 42% of the total.

The $1.00 per car fee for the Self-guided tour was suspended this summer pending action on Golden Eagle legislation and later was eliminated entirely. It was very interesting to note the number of comments from the public wondering why no fee was charged. In fact, several people left money at the entrance self-service leaflet dispenser even though signs informed them no fee was required.

Visitors were recorded from all 50 States, Puerto Rico, and 44 Foreign countries. Sampling showed approximately 76% of the

people during the summer months were visiting the refuge for the first time. About 30% reported using the picnic area. The picnic area and display pasture route accounted for the majority of public use during the period when the self-guided tour route was closed.

School group use was quite heavy through the spring months, particularly in May. Approximately 1,460 students made use of the range for environmental education. An additional 450 students viewed the annual round-up activities in October, and many other groups wanted only to tour the range for a day's "outing."

B. Refuge Visitors

Jan. 7	Norton Minor-B SFW, Billings (courtesy visit)
Jan. 15	Joe Zacek, S.C.S., Missoula-(Range Society Paper)
Jan. 22	John Craighead, BSFW-Mont. Univ. Missoula(elk Telemetry proj.)
Jan. 22	Frank Craighead, Environmental Research Inst. Moose, Wyo.
Jan. 22	Keith Walters, NASA Greenbolt, Maryland(elk telemetry proj.)
Jan. 22	James Maxwell, Smithsonian Inst. Cambridge, Mass. (elk proj.)
Jan. 22	Charles Kurvin, Radiation, Inc.-Melbourne, Fla. (elk Proj.)
Jan. 22	Joel Varney, Mont. Coop. Unit, Missoula (elk project)
Jan. 22	Charles Cote, NASA-Greenbolt,Md.(elk project)
Jan. 22	Leo Heffron, Radiation, Ind.-Melbourne, Fla.(elk project)
Jan. 22	Harry Reynolds, Mont. Coop. Unit-Missoula (elk project)
Jan. 22	Vince Yannone, Mont. Coop. Unit-Missoula (elk project)
Jan. 22	Jim Lynch, NASA-Greenbolt, Md.(elk project)
Feb. 5	Larry Peterson-BSFW-Kalispell-(courtesy visit)
Feb. 13	Owen Vivion, BSFW-Benton Lake NWR-Gt. Falls, Mt.
Feb. 16	Bob Greene-Mont. F&G-Warm Springs, Mt. (cannon net)
Mar. 6	Mel Morris-Univ. of Mont., Missoula (IBP project)
Mar. 19	Nick Mariana, BSFW-Portland, Ore. (slide show)
Mar. 30	Jack Waddell, BSFW-Portland, Ore. (public use)
Apr. 8	Ash Brann-BSFW-Helena (courtesy visit)
May 19	Duane Robertson, County Sanitarian-Polson (safety meeting)
May 22	Bill Browning, Helena (writer & photographer)
June 1	Gene Patten, BSFW-Upper Miss. NWR-Cassville, Wisc.(courtesy)
June 1	Harold Preston, BSFW-Portland, Ore. (Admin. Insp)
June 9	Al Sloan-NYC- Dixon (NYC business)
June 9	Noren Vora-NYC-Dixon (NYC business)
June 9	Jay Rooney-Trout Unlimited-Missoula (Jocko river)
June 15	Dick Martin-BSFW-Ronan (courtesy visit)
June 23	Keith Seaburg-Mont. F&G-Missoula (film)
June 27	Eldon McLaury-BSFW-Malheur NWR-Ore. (courtesy visit)
July 14	Bob Schumaker-Mont. F&G-Kalispell-(Jocko River)
July 15	Burt Webster-BSFW-Noxubee NWR, Miss. (courtesy)
July 24	Tom Smith-BSFW-Portland, Ore. (courtesy)
Aug. 18	Lyson Planz-BSFW-Minidoka NWR, Rupert, Ida.(excess property)
Aug. 20	Joe Zoolk-SCS-Missoula (range tour)
Aug. 20	Bob Ross-SCS-Bozeman (range tour)
Aug. 20	Larry Osbornson-SCS-Missoula (range tour)
Aug. 20	Abe Linford-SCS-Bozeman (range tour)

Bureau of Sport Fisheries and Wildlife
Division of Wildlife Refuges

ANNUAL ~~MONTHLY~~ RECREATIONAL USE REPORT

Refuge name: NBR
State: Mont.

State Code: 26 (1-2) | Congressional District Code: 01 (3-4) | Refuge Code: 134 (5-7) | Report Period Yr. 70 Mo. -- (8-11)

(Card Columns). . . . . (12-13) (14-18) (19-25)			
ACTIVITY	Code	VISITS FOR THE MONTH Total Number	Total Hours
Hunting: Big Game	01		
Upland Game	02		
Waterfowl	03		
Other Migratory	04		
Other	05		
Bow	06		
Fishing: Salt Water	07		
Warm Water	08		
Cold Water	09	1,325	4,100
Environmental Education	10	1,460	1,715
Wildlife Photography	11	5,950	10,725
Wildlife Observation	12	21,040	17,930
Conducted Programs	13	100	500
Field Trials	14		
Wildlife Trails	15		
Wildlife Tours/Routes	16	52,830	93,220
Visitor Contact Stations	17		
Camping (wildlife related)	18		
Picnicking (wildlife related)	19	24,545	24,545
Wildlife Interpretive Center	20		
Off-Site Programs	21	12,190	115

(Card Columns). . . . . (12-13) (14-18) (19-25)			
ACTIVITY	Code	VISITS FOR THE MONTH Total Number	Total Hours
On-Site Programs	22	277	547
*Miscellaneous Wildlife	23	70	8
Swimming	24		
Boating	25		
Water Skiing	26		
Camping	27		
Group Camping	28		
Picnicking	29		
Horseback Riding	30	286	1,700
Bicycling	31		
Winter Sports	32		
Fruit, Nut and Vegetable Collecting	33		
*Miscellaneous Non-Wildlife	34		
Peak Load Day	35	1,540	
Actual Visits	36	91,732	
Fee Area Use	37		
Number of Fee Areas	38	(14-18)	
Fee Collections	39	$	
Collection Costs	40	$	

Form 3-123
(Revised July 1969)

*Use reverse side to indicate types of activities summarized under miscellaneous codes 23 and 34. MAKE NO OTHER ENTRIES ON FACE OF THIS FORM.

Aug.	20	Clayton Ogle-SCS-Bozeman(range tour)
Sept.	8	Sam Sage-BSFW-CMR-NWR-Ft. Peck, Mt. (excess prop.)
Sept.	8	Gene Handel-SCS-Havre, Mont-(courtesy visit)
Sept.	9	Jeff Smith-BSFW-Upper Miss. NWR-McGregor, Iowa(courtesy)
Sept.	9	Ken Grant-Admin. of SCS-Wash. D.C. (range tour)
Sept.	17	Bruce Stolberg-ASFW-Wash. D.C. (courtesy)
Sept.	19	Hal O'Connor-BSFW-Merrit Island NWR-Fla. (courtesy)
Oct.	6	Bill Jones-Colorado F&G -Denver, Colo. (roundup)
Oct.	6	Gary Meyers, Colo. F&G-Denver, Colo. (Roundup)
Oct.	6	Perry Olsen " " " " "
Oct.	6	Howard Lipke, BSFW-Ravalli-NWR, Stevensville(roundup)
Oct.	6	Tom Davies " " " " "
Nov.	3	Guy Connolly-Hopeland Fld. Sta. Univ. Calif. Davis(research)
Nov.	3	Dr. John Oh " " " " " " "
Nov.	16	Eugene Cofer-BSFW-Gt. Falls, Mt. (enforcement)
Nov.	16	Carl Gruener " Portland, Ore. (enforcement)
Nov.	23	Richard Wonacott-BSFW-Lewistown, Mt. (courtesy visit)
Dec.	2	Jack Barryman-BSFW-Wash. D.C. (courtesy visit)
Dec.	2	Homer Ford-BSFW-Portland, Ore. (courtesy visit)
Dec.	2	Norton Minor-BSFW-Billings, Mont (courtesy visit)
Dec.	2	Frank Wetherbee-BSFW-Charlo, Mt. (courtesy visit)
Dec.	4	J.Juan Spillett-Utah State Coop. Wildlife Unit, Logan, Utah (collect sheep)
Dec.	4	Tom Follis-DVM " " " " " " " (collect sheep)

C. Refuge Participation

Kaschke

Jan. 7	Conduct workshop on Environmental Education with local science teachers.
Jan. 8	Presented program to Charlo PTA.
Feb. 9-13	Presented paper on Bison Range grazing program to American Society of Range Mgt. in Denver.
Feb. 24-27	Attended Forest Service Conservation Education Training session in Elsie, Oregon.
Mar. 5	Attended Range Natural Area Committee Meeting in Missoula.
Apr. 22	Presented "Earth Day" program-Charlo High School.
Apr. 24	Presented Range Society paper to Federal Businessmen's luncheon meeting in Missoula.
May 2	Conducted teacher workshop on Enviornmental education.
May 4-6	Attended Refuge Mgrs' workshop in Gt. Falls.
May 12	Fifteen minute television appearance KGVO Missoula.
May 19-20	Attended Rural Area Development meeting & range tour. Missoula.
May 23	Spoke to Saddle Club group at Ravalli Camp.
May 26	Attended technical Action Panel meeting & tour.

June	5-7	Attended annual meeting of Mont. Wildlife Federation in Lewistown.
July	17	Spoke to and gave tour to Mont. Chapter of Soil Cons. soc. fo America.
July	28-31	Attended C.M. Russell NWR to help with Nichols Coulee project.
Aug.	11	Spoke to 25 Foreign diplomats & their families.
Aug.	12	Spoke to visiting foresters from North Carolina.
Aug.	28-29	Tour & talks for Sixth International Short Course.
Sept.	9	Tour for Ken Grant, Administrator of S.C.S.
Sept.	13	Spoke to district meeting of Mont. Wildlife Federation on Flathead Lake WPA.
Sept.	10	Master of Ceremonies for PTA teacher orientation meeting.
Sept.	15	Spoke to Polson Outdoors Club.
Nov.	3	Spoke to Polson Rotary Club.
Dec.	2	Tour for Jack Barryman, Central office.
Dec.	9	Spoke on refuge plans to local committee on Rural Development.

Served as President of Charlo Lions Club and attended all local and zone activities. Served as chairman of program committee for Charlo PTA. Attended numerous meetings of local sportsmen clubs and the Federal Businessmen's Assn. Conducted numerous tours for school groups, writers and photographers.

Barber

Jan.	7	W/Kaschke conduct workshop on environmental Education for local Science Teachers.
Feb.	16	Attended public hearing on proposed pesticide legislation in Charlo.
March	14	Judge for Western Montana district science fair in Hamilton.
March	16	Talk & film "So Little Time " for wildlife week at Charlo School.
March	19	Talk & Film for Wildlife week at St. Ignatius Grade School.
March	19	Talk & Film for wildlife week at St. Ignatius High School.
March	19	Talk and film for Wildlife Week at Arlee School.
March	20	Talk and film for Wildlife Week at Dixon School.
March	25	Judge for St. Ignatius science fair.
May	4-6	Attended Refuge Mgrs. workshop, Gt Falls.
May	24	Rode in annual Saddle Club tour of Range.
June	22	Helped with Goose banding at Ravalli NWR at Stevensville.
July	17	W/Kaschke-talk and film for Mont. Chapter of Soil Conservation Society of America.
Aug.	11	W/Kaschke-talk & film for 25 foreign diplomats and their families.

Aug. 12 W/Kaschke-talk and film for visiting foresters from North Carolina.
Aug. 28-29 Tour Ninepipe & Bison Range with participants of Sixth International Short Course.

Served as Second Vice President and Program Chairman of Charlo Lions Club and attended all regular meetings and special activities. Attended occassional meetings of various area sportsmen's clubs. Conducted numerous on-refuge tours for school groups, photographers and writers.

May

Active member of Masonic Lodge and Charlo PTA. Conducted hunter Safety course for local youngsters. Conducted several school tours and interviews for writers and photographers.

Hogge

Boy Scouts of America:

1. Leadership training chairman for Lake district.
2. Member Western Mont. Council leadership training committee.
3. Member training staff for Tri-District Junior and Senior leadership training program.
4. Member of staff for Tri-District spring camporee.
5. Scoutmaster, Charlo Troop #56.
6. Conducted three two-day adult training sessions.

Aug. 28-29 Helped with tour and barbecue for Sixth Int'l. Short Course.
Dec. Slide talk for LDS Church group.

Coached Junior basketball team.
Conducted several school tours.
Chairman Dist. #28 School Board.

Kraft

May 19 W/Kaschke-fifteen minute television program on KGVO-Missoula.
Aug. 28 Helped with Sixth Int'l. Short Course.

Conducted several school tours, interviews with writers and photographers. Active member in Charlo PTA. Coached Babe Ruth baseball team.

Krantz

Apr. 14 Slide talk to Moiese 4-H group.
Member of Moiese, Pomona, and State Grange.
Member Lake County Development Council. Conducted several school tours and helped with Sixth Int'l. Short Course.

Middlemist

Served as Chairman of School Board for District #9, this is Bob's sixth year on the Board.
Active in Sanders County 4-H affairs.
Conducted several school tours & helped with 6th Int'l. Short Course.

Lampshire

Conducted several School tours.
Helped with 6th Int'l. Short Course.

One of the highlights of the year was a visit by the "Sixth International Short Course on Administration of National Parks and Equivalent Reserves." The 37 participants, representing 23 foreign countries, toured Ninepipe and the Bison Range. An evening barbecue, attended by refuge personnel and their wives gave all the opportunity to talk with these very interesting people. Recently, word was received they enjoyed the experience so much they plan to return in 1971.

Refuge personnel made periodic news releases to local papers, radio and TV Stations.

D. Hunting

There is no public hunting on the Bison Range. General waterfowl and upland game bird hunting condition's are discussed in the Ninepipe and Pablo report.

E. Fishing

Fishing was quite good, at times, along the Jocko River and the public access area received heavy use throughout the summer. Occassional periods of High and cloudy water made it tough on the fly-fishermen, but bait dunkers made out like "bandits". Several trout in the three to five pound class were reported. A few members of the refuge crew kept the water frothy during evenings and week-ends on a regular basis.

F. Violations

The following law enforcement cases were made by refuge personnel this year: all cases were filed in State Court in Polson, Montana.

Date	Defendant	Violation	Officer	Result
5/19/70	Halverson, Gary J.	Fish closed waters	May	$3.50
5/19/70	McDonald, Darrell C.	" " "	May	3.50
5/31/70	Margrave, Thomas E.	" " "	May	25.00
10/10/70	Osborne, Jeffrey A.	Take Protected Species	Barber	Juvenile
10/10/70	Cooper, Robert E.	Hunt on refuge	Barber	10.00
10/10/70	McMaster, Jon T.	Unlawful transport of waterfowl	Barber	25.00
10/10/70	Rude, Patrick L.	Unlawful transport of waterfowl	Barber	Pending
10/10/70	Martin, Peter N.	Unlawful transport of waterfowl	Barber	25.00
10/11/70	Johnson, Bradley E.	No State Bird Liscense	Barber	30.00
10/11/70	Hill, Linda R.	" " " "	Barber	30.00
10/11/70	Dolan, Timothy F.	Unplugged shotgun	Barber	30.00
10/11/70	Hagested, Ronald R.	No State Bird Liscense	May	30.00
10/11/70	Hendrickson, James R	" " " "	May	Pending
10/13/70	Barnes, Rob. D.	Late shooting(31min.)	May	Pending
10/13/70	Rude, Patrick L.	" " "	May	Pending
10/15/70	Gregory, John M	" " (28min.)	May	30.00
10/15/70	Fairbank, Charles M	" " "	May	30.00
10/17/70	Mercer, Gem T.	No State Bird License	Barber	15 days
10/17/70	Palmer, James W.	No hunting License	Barber	Pending
10/17/70	Hill, David B.	No State Bird License	Barber	30.00
10/17/70	Durand, Lonie D.	" " " "	Barber	30.00
10/28/70	Dickson, Karen A.	Fish closed waters	Barber	25.00
10/28/70	Nielsen, Gary E.	" " "	Barber	25.00
10/28/70	Dickson, George	" " "	Kaschke	25.00
11/21/70	Steuerwald, Winston E	No State Bird License	Barber	30.00
11/21/70	Helding, Carl	" " " "	May	Pending
11/21/70	Anderson, Clem P.	Drive geese from refuge	May	Pending
12/10/70	Hensel, James U	No Duck Stamp	Kaschke	Pending
12/10/70	Carr, James S.	" " "	Barber	30.00
12/11/70	Hern, David B.	No hunting License	May	30.00
12/11/70	Hern, Leonard R.	No State Bird License	Barber	30.00
12/12/70	Lienemann, Rob. W.	Fish closed Waters	Barber	Pending
12/29/70	Livingston, Calvin E.	" " "	Barber	Pending
12/29/70	Livingston, Ray C.	" " "	Barber	Pending

This was a particularly bad year for wildlife violations particularly Violators seemed particularly uncooperative with the courts, as shown by the number of cases still pending. Most of the

violators in these cases failed to answer the courts request to appear and warrants have been issued.

G. SAFETY

Scheduled SAFETY meetings and the main topics of discussion were as follows:

Jan. Kaschke, Chairman-Montana Highway Patrolmen Rierson and Brander presented film and spoke on defensive driving.
Feb. Kraft, Chairman-SAFE horsemanship was discussed. Seat belts and their importance was secondary topic.
Mar. May, Chairman-Films on "Lifting, Man's Age Old Problem" and "Hydroplanning" were viewed and discussed.
Apr. Barber, Chairman-Insect and snake bite allergy and first aid were discussed.
May Hogge, Chairman-County Sanitarian Robertson spoke on Air Pollution and County Laws.
June Krantz, Chairman-General SAFETY on Everything from Equipment to Clothing for the benefit of NYC Group and temporary summer employees.
July Hruska, Chairman-Lightning, treatment of lightning victims and range fire proceedures were discussed. May gave fire fighting equipment demonstration for temporary employees.
Aug. May, Chairman-Film "Man Against Fire" was viewed and fire fighting was discussed.
Sept. Kaschke, Chairman-Films on hunting SAFETY were viewed and discussed.
Oct. Lampshire, Chairman-Defensive driving articles from Family SAFETY and Heating systems were discussed.
Nov. Kraft, Chairman-General SAFETY, and carbon monoxide poisoning were discussed.
Dec. Middlemist, Chairman-Nuclear fallout, shelters and emergency preparations were discussed.

No lost-time accidents occured during the year, however maintenanceman Lampshire punctured his thumb on a wire while building a small animal cage and had to have a tetanus shot. The station has accumulated 1230 days without a lost-time accident.

VII OTHER ITEMS

A. Items of Interest

1. Training

Feb. 24-27 Kaschke attended the Forest Service Conservation Education training conference in Elsie, Oregon.

Mar. 31 May and Hogge attended a maintenance Seminar on traffic counter equipment conducted by Streeter-Amet Corporation in Missoula.

2. Flathead W.P.A.

The Wetlands acquisition program in Flathead County, Montana got underway this year with the purchase of 1696 acres along the north shore of Flathead Lake. The area has long been under consideration as a refuge and has tremendous potential for development. The area covers approximately six miles of Marshy shore line and represents one of the largest undeveloped sections of the famous lake.

Options have been taken on three adjoining tracts which could add approximately 650 acres to the W.P.A. and Realty people have been working on several other small areas in the county.

The new Flathead Lake W.P.A. will be administered from the Nation Bison Range.

3. Miscellaneous

Clerk Sharon Scammon transferred to the Division of Wildlife Services in Denver, Colorado. Sharon was a highly efficient clerk and she is sorely missed. The entire crew gathered for an evening picnic to wish her well in her new position. A very appropriate hand-wrought device, dubbed a "gopher-choker", complete with elaborate instructions for use, was presented to her along with a more conventional memento of the Bison Range.

Mrs. Susan McCollum, of St. Ignatius, was selected to fill the clerk vacancy. Susan has progressed rapidly in the many facets of the position and is a valuable addition to the staff.

Manager Kaschke and Joe Zacek, S.C.S. Range Conservationist, presented a paper on the Bison Deferred-rotation grazing program to the twenty third Annual Meeting of the American Society of Range Management in Denver, Colorado. Kaschke reported the paper was very well accepted by the large crowd.

The Kaschke family was blessed with a new addition this fall. Petrina Renee weighed in at 6# 14 oz. the evening of Oct. 23. Needless to say, Marv's chest has been several inches too large for his new uniform shirts ever since!

Maintenanceman Ed Krantz and Assistant Manager Barber received 10 year length-of-service pins in November.

Manager Kaschke and Maintenanceman Krantz each received five year SAFETY awards in December.

B. Credits

Kaschke- Part I- General

Barber- Part II-Wildlife, Part V-Field Investigation or Applied Research, Part VI-Public Relations, Part VII-Other Items and all NR-Forms.

May- Part III-Refuge Development and Maintenance.

McCollum-Part IV-Resource Management and all typing.

All personnel contributed to collection of field data essential to the preparation of this report.

C. Photographs

Photos appended were taken by various refuge personnel with the refuge 4X5 Speed Graphic or 35mm Exacta Cameras.

Submitted by:

Marvin R. Kaschke
(Signature)

Refuge Manager
(Title)

Date:

Approved, Regional Office:

Date: 7-6-70

(Signature)

Asst. Supvr. Refuges
(Title)

3-1752
Form NR
(April 46)

UPLAND GAME BIRDS

Refuge National Bison Range Months of Jan to Apr, 19 40

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Richardson Blue Grouse	2,000 a. conifer								50	
Ruffed Grouse	300 a. streambottom								5	
Columbian Sharptailed Grouse	12,000 a. mixed								10	2 birds observed several times this spring
Ring-necked Pheasant	2,000 a. grass & streambottom								100	
Chukar Partridge	6,000 a. mixed								30	
Gray Partridge	12,000 a. Mixed								700	

3-1752
Form NR-2
(April 6)

UPLAND GAME BIRDS

Refuge National Bison Range Months of May to Sept., 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Richardson Blue Grouse	2,000 a. conifer		4	40					80	
Ruffed Grouse	300 a. Stream bottom								5	
Columbia Sharp-tailed Grouse	12,000 a. mixed								12(?)	Two observations of 2 birds this period
Ring-necked Pheasant	2,000 a. grass & stream bottom		6	75					175	
Chuckar Partridge	6,000 a. mixed		2	15					40	
Gray Partridge	12,000 a. mixed		17	300					1600	

3-1752
Form NR-2
(April 19

UPLAND GAME BIRDS

1613

Refuge National Bison Range Months of September to December, 1970

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Richardson Blue Grouse	2,000 a. conifer					0	0	0	70	
Ruffed Grouse	300 a. stream-bottom					0	0	0	5	
Columbian Sharp-tailed Grouse	12,000 a. mixed					0	0	0	10(?)	No observations this period
Ring-necked Pheasant	2,000 a. grass and stream bottom					0	0	0	350	Heavy influx from outside refuge due to hunting pressure
Chukar Partridge	6,000 a. mixed					0	0	0	30	
Gray Partridge	12,000 a. mixed					0	0	0	1,200	

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge National Bison Range Calendar Year 1970

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	M:F
Bison	15,600 a. grassland	69			80				8*			402	314	84:100
Elk	5,000 a. conifer & grass	7				2*			1			60	57	90:100
Mule Deer	10,000 a. conif, brush & grass	81			90				7	4	Mont. F&G	321	229	86:100
White-tailed deer	4,000 a. conif, brush, & grass	67			52			1	2	4	Mont. F&G	221	168	104:100
Bighorn Sheep	8,000 a. conifer & grass	10		1		2*		1				52	48	105:100
Antelope	6,000 a. grassland	62				2*	42		2			174	130	104:100
Mt. goat	2,000 a. conifer	4				2*						15	13	unknown
Texas Longhorn steer	5 a. pasture											2	2	-

Remarks: * Buffalo: Losses from various natural causes and accidents - 2 bulls disposed of due to injuries - meat salvaged and donated to schools.

*Elk, Sheep, Antelope and Goats: 2 each collected for research, meat and skeletons sold or donated to schools.

* Antelope: Heavy fawn losses due to undetermined cause.

3-1754
Form [illegible]
(June 1945)

SMALL MAMMA

Refuge National Bison Range Year ending April 30, 1970

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Coyote	15,000 a. all habitat													10
Bobcat	" " "													5
Striped Skunk	2,500 a. streambottom													45
Badger	10,000 a. grassland													40
Beaver	100 a. streambottom													5
Mink	" "													10
Muskrat	50 a. wetland													30
Yellowbelly Marmot	2,000 a. mixed													120
Porcupine	4,000 a. "													40
Raccoon	100 a. streambottom													10
Columbian Groundsquirrel	5,000 a. Grassland													300

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert L. Barber

3-1757
Form NR-7
(Rev. June 19[illegible])

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge National Bison Range Year 19 70

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Timothy	80	R	9/22	Surplus	0	200#							
Alta fescue						7#	Northside range	4#/A	4 acres	16#	Aug.	Unknown	
Western W wheat						18#							
Kentucky bluegrass						15#							
Clover	60	R	9/22		0	60#							

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: Small eroded hill tops mulched and seeded with fescue/ wheatgrass mix.

INTERIOR--PORTLAND, OREGON

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge National Bison Range County Lake State 1970

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
None									
								Fallow Ag. Land	None

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations 3

Refuge personnel

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other Horses	3	24	$48	
				1. Total Refuge Acreage Under Cultivation				40*
Hay - Wild				2. Acreage Cultivated as Service Operation				40

* Periodic cultivation for grass hay and irrigated pasture.

3-1570
NR-8a
(4/54)

REFUGE GRAIN REPORT

Refuge National Bison Range Months of January through December, 1970

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Oats	165		165			65	65	100		100	
Barley	817	528	1,345			495	495	850		850	

(8) Indicate shipping or collection points

(9) Grain is stored at Headquarters granary

(10) Remarks Barley received from Kootenai National Wildlife Refuge.

*See instructions on back.

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge: National Bison Range

Proposal Number:

Reporting Year: 1970

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/18-7/20	Canada Thistle	Roadside & Picnic Area	34	2,4-D Amine	18 Gallons	2# Acid Equiv.	Water 1:100	Ground
7/6-7/11	St. John'swort	Upper North Range	1,569	2,4-D Amine	784.5 Gallons	2# Acid Equiv.	Water 20:100	Arial

10. Summary of results (continue on reverse side, if necessary)

Canada Thistle - excellent apparent kill, extent of long range control is questionable.

St. John'swort - apparent kill 90%.

INTERIOR - PORTLAND, OREGON

Research Reports

REPORT ON THE PRELIMINARY RESULTS OF A STUDY OF THE SOCIAL BEHAVIOR OF THE PRONGHORN ANTELOPE 1970

by

David W. Kitchen

Department of Wildlife and Fisheries
School of Natural Resources
University of Michigan, Ann Arbor
November 18, 1970

Introduction

This interim report covers the period from May 7 to October 5, 1969 and from May 1 to November 1, 1970 during which work was conducted on the National Bison Range, Montana. The purpose of the study is to describe and analyze the social behavior of the pronghorn antelope, and its relationship to other animals on the range. The field work was supported by grants from the Wildlife Management Institute, Washington, D.C., and the Welder Wildlife Foundation, Sinton, Texas.

Intraspecific Behavior

Eight hundred and seventy-six hours of actual behavior observations have been accumulated. Forty-four behavioral acts have been described, and the variations and temporal patterns have been followed through over 1,200 interaction sequences. A statistical analysis to determine the most typical sequences of acts for each type of interaction, i.e. agonistic, sexual, etc., has not yet been carried out. This type of analysis will be done at the completion of the field work. Also further comparisons of the pronghorn's displays with those of other ungulate species will wait until the field work is complete.

A further analysis of the pronghorn's white markings has shown that they vary somewhat with the molt from the summer to winter coat and vice versa. This does not hinder in any way, however, their usefulness as clues for identifying individual animals. The changes are usually minor and the observer is able to note them as they take place. This has made it possible to follow the success of the master bucks during both ruts observed so far and to clarify the movements of the does during the rut. It has also helped establish the females role within the herd.

As noted in the 1969 progress report, the pronghorn has been described as both a territorial (Cole, 1956; Bromley, 1969) and a harem (Buechner, 1947; Gregg, 1955) breeder. It appears, at the Bison Range at least, that neither of these

A typical bachelor buck interaction, between animals closely ranked in the hierarchy, usually starts with a hard stare, which leads to staring with horns touching (as in figure). If the interaction is not settled at this point sparing begins and continues until one buck is dominated.

Subordinate bucks are treated like females by the dominate male in an interaction. Mounting and erection of the penis are common and the subordinate male may even perform lordosis.

In this picture a full mount has been allowed and the dominate male has attempted a pelvic thrust.

One of the bucks most important behaviors is marking his area with feces and urine (also covering female excreta with his). Here a buck sniffs and paws a spot where a female has urinated.

He then marks the spot with urine, and may perform a lip curl (flehman) during this phase of the sequence.

With an extreme change of posture he then defecates on the spot. Only bucks make this posture change and so from a distances he announces there is a buck in the area. An interesting point was that after the master bucks left their territories in early November they did not always go thru this sniff-paw-urinate-deficate (SPUD) sequence. Which adds support to the contention that this display may be used to defend a territory.

terms fully describes the pronghorn's breeding system. Elements of both systems seem to be integrated into the pronghorn's behavior in such a manner that it makes the exclusive use of either category tenuous.

Major differences were noted between the 1969 and 1970 breeding seasons, but, even with these differences, a basic pattern occurred in both years. Master bucks were on "territories" when field work started in both years and were defending them against all other males. All spring and summer bachelor males were easily routed with only a short chase or laugh call (see Gregg, 1955 for description). "Territories" wre defended with or without does in the area.

By the first week in September master bucks were starting to court and herd does, but the females moved away readily and were often pursued. At this time the bachelor herds broke up into small bands (2-9 animals) that wandered over the entire range. As the rut progressed these groups became more aggressive in their attempts to approach does and would run into the female groups attempting to cut out a doe. As a result the "territorial" defense became more demanding for a master buck, as these males no longer gave way readily to a vocalization or threat of chase and had to be driven from the area.

As females started entering estrus (Sept. 12, 1969 and Sept. 19, 1970, and allowed full courtship and copulation, master bucks ceased to abandon their harems readily to defend their "territory". Whether or not a doe will be abandoned depends, to a large extent, on the circumstances of the courtship. An estrus doe being courted by a master buck, with 3 or more bachelor males present, was always defended and not the"territory". If only 1 or 2 males were in the area, or visible, estrus does, in 1969, were abandoned 61% (11 of 18 observations) of the time to defend the "territory" and defended 39% (7 of 18 cases) of the time.

No estrus does were deserted under any conditions in 1970, but it must be noted that there were only 5 cases where only 1 or 2 bachelor males were present

during courtship. This was caused by an increase in bachelor bucks from 1969 to 1970, which was due to the 1969 fawn crop that was 67% males (28 of 42 fawns). As yearlings these bucks increased the pressure on master bucks tremendously, and thus few males with harems had less than 3-5 bachelors around.

Perhaps the most unusual aspect of the pronghorn's breeding system is the territorial defense in the spring and summer which changes (in most cases) to a "harem" defense, due to bachelor pressure, during the rut. The display of "territoriality" during the spring and summer may be more easily explained than its breakdown during the rut.

By defending a "territory" all summer, when bachelors are easily chased away, a master buck assures himself control of a harem during the rut. The earliest does to ovulate do so when many bachelors (especially yearlings) are just starting to take part in the rut and to aggressively approach does on "territories". Thus, master bucks may effect a copulation or even two while some males are only beginning to take part in breeding activities and still have a tendency to flee precipitously at the approach of the master buck. This is born out to a degree by the fact that early courtships have few (usually 1 or 2) bachelors in attendance, while later ones usually have many (3-6 in general, 18 in one case) males harassing the courting buck. Another interesting observation is that 90%, in 1969, of the encounters where estrus does were deserted, to defend the "territory", occurred during these early courtships.

The ideas which may explain the gradual shift from a "territorial" to a "harem" system as the breeding season progresses are highly speculative at this time. Therefore, the discussion of this change will be deferred until a more thorough data analysis has been completed.

Two new "territorial" males were established in 1970. They were numbers 1 and 3 in the bachelor hierarchy in 1969, number 2 disappeared during the winter.

The process of staking out a "territory" is a gradual one and seems to require at least an entire summer to be accomplished. Both new "territories" were between old ones, were part of the bachelor herd's home range, and were in areas little used by neighboring master bucks, but occasionally frequented by doe-fawn groups during the summer.

On May 1, 1970 both bucks were associated with a bachelor group, but as summer progressed they became intolerant of the group and would remain alone in their own areas when the bachelor group moved away. About mid-July they started to react aggressively to the bachelors and would stand their ground to display threateningly at neighboring master bucks (though they usually gave way to them in the end). Even though they reacted aggressively to bachelor herds they would, from time to time, join them, move about with them, and allow them on their respective "territories". In mid-August they still moved in and out of bachelor groups, but now began to give full (head-down, earsback broadside) threat displays to master bucks and the encounters ended in a draw, thus establishing a mutual boundary with their neighbors.

As the breeding season got under way these two (NF and EB) were firmly settled on their "territories" and defeated all encroaching males (in one case NF lost his place for six hours to his neighbor NS, but later defeated NS and regained his area). EB bred 3 does (he also bred 2 in 1969 as the top bachelor male), but even though NF was associated with 2 estrus does during the peak of the rut no copulations were directly observed.

Master bucks accounted for 96% (24 of 25) of the known copulations, while 4% (1 of 25) were by bachelor bucks. Bachelor bucks were less successful this year (even though more abundant) than last (21% of 17 observed breedings), because the harems were smaller. They applied so much pressure that a master buck with more than 2 or 3 does was rare (some had more for short periods, and one exceptional male had 6-8 most of the rut). Those bucks with harems were usually

successful in their herding attempts and controlled the same does for several days. Their success was due, in no small part, to the bachelors themselves who constantly drove the females (not by design) back to doe groups by their aggressive courting attempts. This kept the does in a tight group which aided the master buck's herding efforts.

Pronghorn females move within a well described home range most of the year. Only when the large winter herds are formed do all the does in an area come together. At this time the female hierarchy is most clearly expressed. There are a large number of loops in it, and it does not appear to be a simple linear hierarchy. It works to assure that dominant does feed and lay down where they choose. These dominant animals may be followed more frequently by other does, but no clear numerical data have been compiled as yet.

Interspecific Behavior

The observations regarding interspecific behavior and habitat selection for 1970 were similar to those of 1969. Some new observations of bison-pronghorn associations were made. It was noted that buck groups are seen in and about bison herds more frequently than doe-fawn groups. This is not too surprising as there is a gradation, based on sex and age, in the degree of nervousness a pronghorn displays around a bison group. Fawns are most apt to react with alarm at the approach of a bison, does are next (both yearlings and adults), then come yearling bucks, older bachelors, and then master bucks. Also lone animals (except a master buck) are more likely to react with alarm than a group at the approach of a bison herd.

Proposed Further Research

In order to check the validity of the observations made at the Bison Range, the study will be moved to the Townsend-Toston Flats area in central Montana. The present antelope herd at the Bison RAnge was transplanted from this area.

In the new area, observations of free-roaming antelope will be continued, and documentation of acts will proceed as planned through photography with a 35 mm. camera. Tape recordings will be attempted and later analyzed with sonograms, especially in the case of the bucks' laugh call. A weekly spot light census will be continued through another year, and all animals observed will be recorded as to species and plotted according to location and habitat.

A few fawns will be ear-tagged in 1971-these will be used to determine, if possible, the causes of mortality in the Bison Range herd. If arrangements can be made, radios will be placed on some fawns so that their movements and ultimate (if they do not survive) fate may be clearly documented.

Forage studies similar to those at the Bison Range will be carried out in the Townsend-Toston areas so that comparisons may be made between the two areas.

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Ninepipe & Pablo

NINEPIPE AND PABLO NATIONAL WILDLIFE REFUGES

Narrative Report

January 1, 1970 to December 31, 1979

REFUGE PERSONNEL

These refuges are managed from the National Bison Range Office.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES AND WILDLIFE
FISH AND WILDLIFE SERVICE
Moiese, Montana

C O N T E N T S

NINEPIPE AND PABLO NATIONAL WILDLIFE REFUGES

Narrative Report

January 1, 1970 to December 31, 1970

I. GENERAL

A. Weather Conditions

The winter months were generally characterized by above normal temperatures and precipitation. March and April were colder than normal with continued above average precipitation. The summer months were, without exception, warmer and wetter than usual. From September through the end of the year temperatures were generally below normal. Fall precipitation varied about the norm, being low in September and October and generally high the last two months.

B. Habitat Conditions

1. Water

a. Ninepipe

The reservoir was 5.7 feet below normal level for the first of the year at 2996.1' msl. Levels began to rise in late February, but continued somewhat below normal until mid-May. By June the reservoir exceeded average levels and remained well above normal until mid-October when it had dropped about one foot below the norm. Some inflow was received during December, raising the reservoir about one foot above average by the end of the year.

As expected, the very low levels attained during the fall of 1969 and maintained through the early part of 1970, invited nesting in precarious sites and caused heavy loss to the rising waters of the late spring.

b. Pablo

Pablo reservoir was dry until April. On May first the water was still 13 feet below normal, but by the end of the month, the level had exceeded the average by a foot. The reservoir continued way above normal until late September, and is about one and one half feet below the norm at the end of the year.

The rapidly rising water level undoubtedly took its toll of waterfowl nests, but the effect was not so drastic as Ninepipe due to much lower nesting populations.

2. Food and Cover

a. Ninepipe

Early spring cover conditions still showed effects of over use by cattle in 1969, as reported last year. Drastic reduction in use, (90 A.U.M.'s compared to 270 A.U.M.'s) left much more desirable situation in 1970.

Aquatic plant production was excellent again this year, with extensive beds of Sago and other pond weeds. Smartweed growth was also very good. The drawdown in August and September exposed many acres of outstanding goose browse and made other aquatic foods readily available to the ducks.

Cereal grains produced on the surrounding State owned wildlife management area, provided ample food for migrant and wintering birds.

b. Pablo

Upland cover conditions at Pablo were good all year. Tree and shrub areas fenced last year quickly increased in understory density and provided excellent cover for upland birds and deer.

Aquatic production was not checked this year, but cursory inspection showed few beds. As usual, emergent vegetation was almost non-existent. Goose browse was fairly good on exposed flats during fall months.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

a. Ninepipe

Whistling Swans were first noted the week of February 22. They peaked three weeks later at 230 birds and were last seen April 15. The bulk of the birds had gone through by the end of March. Few swans used the refuge during fall migration. They arrived, as seems to be their normal procedure, during opening week of waterfowl hunting season. The peak of 60 birds occurred the week of October 25. A small number, probably cripples, remained through December 31.

Canada geese arrived the week of February 22 also, peaking at 266 two weeks later. About a dozen Snow geese used the reservoir during the entire month of April.

The Canadas quickly started establishing territories and selecting nest sites. Most nested on existing islands and

tree platforms, but two pairs claimed the new islands which had been built in January. Production was estimated at 125 goslings.

By mid August the population had climbed to 515 and leveled there until September 20 when migrants swelled it to nearly 900. Numbers fluctuated, but generally dropped until the end of the year.

Mallards were first seen on the refuge the same week as the Swans and geese although some birds wintered along the river and small creeks in the area. Other species began to arrive the following week. All species had made their appearance by the second week of March, except Redheads and Cinnamon teal which arrived March 22 and April 26 respectively. Spring peak was a meager 5,130 birds the last week in April.

Duck breeding pair counts, made on May 28, revealed only 193 pairs around the reservoir. As mentioned before, duck nesting efforts were hampered by rising water levels and production was estimated at 324 young, primarily Mallards.

Pintails began to arrive in mid-August, peaking at slightly over 21,000 the second week of September. That week produced the highest duck population of the fall season with 33,840 birds. Pintails had passed through by the 20th of Sept. and duck totals dropped to approximately 8,500, primarily Widgeon and Mallards. Mallards peaked at 13,000 about the end of November. They remained through the end of the year, maintaining a small patch of open water near the north end of the reservoir and feeding on the State Management Area.

b. Pablo

Pablo's dry condition pretty well eliminated spring waterfowl use. The first birds were noted in mid-April and nearly all species were represented at that time. Spring peaks were two Canada geese, 510 ducks and 65 coot.

Summer populations were very low with only 20 geese and under 200 ducks. Production was estimated at 12 Canada geese, 69 ducks and 15 coots.

The fall migration showed peaks of 15 Whistling swan on October 4, 1,305 Canada geese, September 20, and 19,960 ducks the first week in September. Pintails made up the bulk of the fall duck population, peaking at just over 13,000. Duck use dropped sharply after the Pintails departed and remained under 2,000 the rest of the fall.

2. Marsh and Water Birds

Both Red-necked and Western grebes nested in substantial

numbers at Ninepipe, producing approximately 75 young each.

Great Blue Herons established a colony of 52 active nests on islands near the northwest end of the reservoir. These birds apparently moved to the refuge from the colony on the Flathead River. An estimated 75 young birds were produced.

Forster's and Black Terns were first recorded on May 8 and June 1, respectively. Both species nested, producing about 50 young each. California and Ring-billed gulls had a successful nesting season, raising an estimated 300 and 200 young respectively.

B. Upland Game Birds

Ring-necked Pheasant populations appeared quite good on both refuges. Production was approximately 125 at Ninepipe and 100 at Pablo. Both refuges experienced heavy influx from surrounding areas during hunting season and year end totals were estimated at 350 at Ninepipe and 250 at Pablo.

C. Big Game Animals

Several Whitetailed deer were observed at Pablo refuge this year. The total was approximately seven head, with at least one set of twin fawns.

D. Fur Animals, Predators, Rodents and Other Mammals

Striped skunks were numerous on both areas. Badgers and long-tailed weasels were observed on both refuges this year. Few Muskrats were noted at Ninepipe, probably due to low over winter water levels.

E. Hawks, Eagles, Owls, Ravens and Magpies

Bald Eagles were first noted March 2 at Ninepipe. Two adults and one immature bird used the refuge for about three weeks. In late December four adult and two immature birds were present, cleaning up crippled waterfowl.

One Golden eagle was noted on each refuge during April, and two birds were present during the fall months.

A single Osprey was recorded at Pablo in late August. Few other raptors were noted on either refuge.

F. Other Birds

No unusual sightings or new species were recorded on either area. Both refuges support interesting populations of warblers, sparrows and other passerines.

G. Fish

Bass fishing was very popular at Ninepipe this spring and early summer. Fish were not running as large as they have in past years, but most anglers were able to creel an occasional fish in the two to three pound range. The biggest share of the creel consisted of yearling fish in the 8-12" class.

The Bureau's Ennis National Fish Hatchery stocked 30,000 rainbows in the 8" and larger class at Pablo during July. Fishing pressure was very light this summer, but should increase substantially this winter after waterfowl season. Pablo is noted for producing good sized trout and usually attracts many anglers from the local area, but dry conditions of the reservoir over winter of 1969-70 put a damper on the sport.

H. Reptiles

Nothing to report.

I. Disease

Nothing to report.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

Eight small earthern islands were constructed with a bulldozer to provide goose nesting sites in the Northwest portion of the Ninepipe refuge. Three straw bales were placed on each for nesting platforms. Canada geese showed interest in all of the islands and successfully nested on at least two.

Six information leaflet shelters were designed and constructed in the refuge shop. These will be installed at strategic points at Ninepipe, Pablo refuges.

The Ninepipe picnic area was moved and kept free of garbage throughout the public use period.

B. Plantings

Nothing to report.

C. Collections and Receipts

Nothing to report.

D. Control of Vegetation

1. Biological Control

Nothing to report.

2. Chemical Control

Nothing to report.

E. Planned Burning

Nothing to report.

F. Fires

Nothing to report.

IV. RESOURCE MANAGEMENT

A. Grazing

1. Ninepipe

The Bureau of Indian Affairs issued the Ninepipe grazing permits for a maximum of 100 A.U.M.'S in accordance with the new range survey conducted in 1969. The permittee turned in 23 head which used 92 AUM'S during summer months. Cover conditions were much improved this year following the reduction in use.

2. Pablo

The permittee at Pablo grazed 87 animals for four months, totalling 348 A.U.M.'S. No grazing problems were evident here except that some damage to trees and shrubs was noted where cattle had congregated for shelter. Some tree areas have been fenced and others will be done in the immediate future.

B. Haying

None.

C. Fur Harvest

Trapping is allowed on refuges under control of the Bureau of Indian Affairs, but little activity has occurred in the past few years.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Progress Reports

1. Waterfowl Banding

Preseason Mallard banding was unsuccessful this year. Few birds were present prior to hunting season and none were ever established on the baits. Montana Fish and Game Department again assigned a man to the project on a daily basis, keeping baits and nets under constant surveilance, but to no avail.

VI. PUBLIC RELATIONS

A. Recreational Uses

Visitor use of Ninepipe and Pablo was estimated at 8,500 actual visits, up from 6,700 last year. Fishing continues to be the most popular activity at both refuges.

B. Refuge Visitors

Included in Bison Range report.

C. Refuge Participation

Included in Bison Range report.

D. Hunting

There is no public hunting on either refuge. However, the State owns and manages considerable acreage around the refuges for this activity. This year the goose season was shortened, closing on December 6. In past years a longer season has been adopted with provisions to close that portion of the State west of the continental divide when a desired kill of 400 had been attained. This closure has normally occured about the first week in December. The kill was reported to be similar to the average of the past several years and there was none of the usual confusion surrounding the early closures. The State moved the pits in their controlled hunting area back 100 yards from the refuge boundary, to provide a retrieving zone. Hunter reaction was highly favorable and the usual border line hunting and refuge trespass problem was largely solved.

The opening week-end of pheasant season showed success was down slightly from last year, at 1.5 birds per hunter compared to 1.7 in 1969. State check station figures showed the hen kill was about the same as last year, at 25% of the bag. (State limit is

three pheasants per day, one of which may be a hen)

E. Violations

Included in Bison Range Report.

F. SAFETY

Included in Bison Range Report.

VII. OTHER ITEMS

A. Items of Interest

The Western Montana district supervisor for the Division of Wildlife Service continues to occupy Ninepipe headquarters facilities.

B. Report Credits

Section III, Foreman May
All other sections, Assistant Mgr. Barber
Typing, Clerk McCollum

9-1750
Form 9R-1
(Rev. March 1953)

WATERFOWL

REFUGE MEEKPIPE MONTHS OF January TO April, 19 7[illegible]

(1) Species	(2) Weeks of reporting period: 1/4 - 10 (1)	1/11 -17 (2)	1/18 -24 (3)	1/25 -31 (4)	2/1 - 7 (5)	2/8 - 14 (6)	2/15 -21 (7)	2/22- 28 (8)	3/1 - 7 (9)	3/8 - 14 (10)
Swans:										
Whistling								30	60	230
Trumpeter										
Geese:										
Canada								100	100	266
Cackling										
Brant										
White-fronted										
Snow										
Blue										
~~White~~ TOTAL GEESE:								100	100	266
Ducks:										
Mallard								300	300	530
Black										
Gadwall										
Baldpate									100	515
Pintail									65	1,340
Green-winged teal										60
Blue-winged teal										
Cinnamon teal										
Shoveler										5
Wood										
Redhead										
Ring-necked										
Canvasback										80
Scaup										
Goldeneye										105
Bufflehead										
Ruddy										
Other ~~Merganser~~										65
TOTAL DUCKS:								300	465	2,700
Coot:										

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Cont. F
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE NINEPIPE MONTHS OF January TO April, 19 70

(1) Species	(2) Weeks of reporting period: 11 (3/15-21)	12 (3/22-28)	13 (3/29-4/4)	14 (4/5-11)	15 (4/12-18)	16 (4/19-25)	17 (4/26-5/2)	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling	230	100	3	[illegible]	4				4,620		
Trumpeter											
Geese:											
Canada	266	150	91	91	85	85	65		9,093		
Cackling											
Brant											
White-fronted											
Snow				11	13	11	11		322		
Blue											
~~Other~~ TOTAL GEESE:	266	150	91	102	98	96	76		9,415		
Ducks:											
Mallard	530	500	485	485	550	700	1,120		38,500		
Black											
Gadwall							30		390		
Baldpate	515	500	215	215	300	500	795		27,405		
Pintail	1,340	1,000	420	420	400	400	420		40,635		
Green-winged teal	60	100	70	70	225	300	425		9,170		
Blue-winged teal											
Cinnamon teal							15		105		
Shoveler	5	50	200	200	400	400	485		12,215		
Wood											
Redhead		50	85	85	50	150	205		4,375		
Ring-necked											
Canvasback	80	100	165	165	75	100	250		7,105		
Scaup			90	90	60	200	320		5,320		
Goldeneye	105	100	40	40	25	25	25		3,255		
Bufflehead			25	25	15	40	70		1,225		
Ruddy							900		6,300		
~~Other~~ Merganser	65	50	45	45	25	25	30		2,590		
TOTAL DUCKS:	2,700	2,450	1,870	1,870	2,325	2,840	5,130		158,590		
Coot:				1,115	1,000	2,500	4,210		61,775		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	4,620	230	
Geese	9,415	266	
Ducks	158,550	5,130	
Coots	61,775	4,210	

SUMMARY

Principal feeding areas Grain Fields on surrounding State -owned management area

Principal nesting areas

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-
(Rev. March 1953)

WATERFOWL

REFUGE Minepipe MONTHS OF May TO September, 1970

(1) Species	(2) Weeks of reporting period									
	5/3 - 9 : 1	5/10-16 : 2	5/17-23 : 3	5/24-30 : 4	5/31-6/6 : 5	6/7-13 : 6	6/14-20 : 7	6/21-27 : 8	6/28-7/4 : 9	7/5-11 : 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	148	171	250	270	270	270	270	270	270	270
Cackling										
Brant										
White-fronted										
Snow	3									
Blue										
~~Other~~ Total Geese	151	171	250	270	270	270	270	270	270	270
Ducks:										
Mallard	100	150	200	300	300	300	300	300	300	300
Black										
Gadwall	30	10	10	10	10	10	10	10	10	10
Baldpate	70	25	25	25	25	25	50	50	50	50
Pintail	30	20	25	35	100	100	100	100	100	100
Green-winged teal	60		10	10	10	10	10	10	10	10
Blue-winged teal	30	25	35	50	50	50	50	75	75	100
Cinnamon teal	10	5	10	10	10	10	10	10	10	10
Shoveler	95	40	20	20	20	20	20	40	40	40
Wood	5	5	5	5	5	5	5	5	5	5
Redhead	20	20	20	35	35	40	75	100	100	150
Ring-necked	5	5	5	5	5	5	5	5	5	5
Canvasback	20	25	20	20	20	25	30	30	30	50
Scaup	50	40	20	20	20	20	40	40	40	60
Goldeneye										
Bufflehead	5									
Ruddy	340	80	20	20	20	20	20	20	20	40
Other										
Total Ducks	870	450	425	565	630	650	725	795	795	930
Coot:	250	280	280	280	280	280	300	350	400	400

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Cont. N
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Minnipe MONTHS OF May TO Sept., 1970

(1) Species	(2) Weeks of reporting period 7/12-18 : 11	7/19-25 : 12	7/26-8/1 : 13	8/2-8 : 14	8/9-15 : 15	8/16-22 : 16	8/23-29 : 17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	270	325	325	325	335	515	485	(5039)	35,273	14	125
Cackling											
Brant											
White-fronted											
Snow								(3)			
Blue											
Total Geese:	270	325	325	325	335	515	485	(5042)	35,294		
Ducks:											
Mallard	300	300	400	400	1000	1520	1960	(8130)	59,010	3	156
Black											
Gadwall	20	20	20	20	20	50		(270)	1,890	1	6
Baldpate	50	50	50	50	200	850	3590	(5175)	35,225	1	18
Pintail	100	100	100	100	500	2880	12,760	(17250)	120,750	2	24
Green-winged teal	10	10	10	10	50	80	50	(360)	2,520		
Blue-winged teal	100	100	150	150	200	475	915	(2630)	18,410	5	36
Cinnamon teal	10	10	10	10	10	10	10	(165)	1,155		6
Shoveler	40	60	60	60	100	200	200	(1075)	7,525	1	12
Wood	5	5	5	5	5	5	5	(95)	595		6
Redhead	150	150	150	200	400	400	1600	(3655)	25,585	4	24
Ring-necked	5	5	5	5	5	5	5	(85)	595		
Canvasback	50	75	75	75	120	120	120	(905)	6,335	3	18
Scaup	60	60	60	60	300	210	200	(1500)	10,500	2	12
Goldeneye											
Bufflehead								(5)	35		
Ruddy	40	60	60	60	150	190	200	(1360)	9,520	1	6
Other											
Total Ducks:	940	1005	1155	1205	3060	7095	21655	42950	300,650	23	324
Coot:	600	600	600	1000	1500	2880	4625	(11905)	104,335		400

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	———	———	———
Geese	35,294	515	125
Ducks	300,650	21,655	324
Coots	104,335	4,625	800

SUMMARY

Principal feeding areas Aquatics in reservoir and surrounding cereal grain fields.

Principal nesting areas Islands in north west portion of reservoir

Reported by R. L. B.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

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1953

3-1750
Form NR-
(Rev. March 1953)

WATERFOWL

REFUGE Ninepipe National Wildlife Refuge MONTHS OF September TO December, 1970

(1) Species	(2) Weeks of reporting period: 8/30-9/5 (1)	9/6-9/12 (2)	9/13-9/19 (3)	9/20-9/26 (4)	9/27-10/3 (5)	10/4-10/10 (6)	10/11-10/17 (7)	10/18-10/24 (8)	10/25-10/31 (9)	11/1-11/7 (10)
Swans:										
Whistling						15	15	30	60	60
Trumpeter										
Geese:										
Canada	485	405	405	895	895	895	670	670	705	705
Cackling										
Brant										
White-fronted		15	15	15	15	15	15			
Snow						5	5	5	5	
Blue										
~~XXXXXX~~ TOTAL GEESE	485	420	420	910	910	915	690	675	710	705
Ducks:										
Mallard	1,960	5,000	5,000	740	740	2,500	3,145	3,145	3,145	6,000
Black										
Gadwall		100	100	50	50	50	100	100	100	
Baldpate	3,530	6,480	6,480	6,550	6,550	4,000	2,170	2,170	2,170	2,000
Pintail	12,760	21,060	21,060	445	445	600	825	825	825	400
Green-winged teal	50	500	500	365	365	500	645	645	645	300
Blue-winged teal	915	200	200							
Cinnamon teal	10									
Shoveler	200			100	100	200	200	200	200	200
Wood	5									
Redhead	1,600	200	200	55	55	100	100	100	100	100
Ring-necked	5									
Canvasback	120									
Scaup	300	200	200	50	50	50	50	50	50	50
Goldeneye										50
Bufflehead										
Ruddy	200	100	100	50	50	50	100	100	100	100
Other										
TOTAL DUCKS	21,655	33,840	33,840	8,405	8,405	8,050	7,335	7,335	7,335	9,200
Coot:	8,000	8,000	8,000	4,825	4,825	1,000	650	650	650	200

3 -1750a
Cont. N
(Rev. March 53)

WATERFOWL
(Continuation Sheet)

REFUGE Ninepipe National Wildlife Refuge MONTHS OF September TO December, 1970

(1) Species	(2) Weeks of reporting period: 11 (11/8-11/14)	12 (11/15-11/21)	13 (11/22-11/28)	14 (11/29-12/5)	15 (12/6-12/12)	16 (12/13-12/19)	17 (12/20-12/26)	18 (12/27-1/2)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling	40	20	20	10	10	5	5	5	2,065		
Trumpeter											
Geese:											
Canada	400	350	265	200	200	100	100	35	58,660		
Cackling											
8 Brant											
White-fronted									630		
Snow									140		
Blue											
~~Other~~ TOTAL GEESE	400	350	265	200	200	100	100	35	59,430		
Ducks:											
Mallard	8,000	10,000	12,850	13,000	13,000	10,000	9,000	8,000	806,575		
Black											
Gadwall									4,550		
Baldpate	500	500	50	50	50	50	50	50	303,800		
Pintail	100	50							415,765		
Green-winged teal	300	50							34,055		
Blue-winged teal									9,205		
Cinnamon teal									70		
Shoveler	50								10,150		
Wood									35		
Redhead	50								18,620		
Ring-necked									35		
Canvasback									840		
Scaup	50								7,700		
Goldeneye	100	150	150	200	200	200	200	200	10,150		
Bufflehead											
Ruddy	50	25							7,175		
Other											
TOTAL DUCKS	9,200	10,775	13,050	13,250	13,250	10,250	9,250	8,250	1,628,725		
Coot:	0	0	0	0	0	0	0	0	257,600		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	2,065	60	
Geese	59,430	915	
Ducks	1,628,725	33,840	
Coots	257,600	8,000	

SUMMARY

Principal feeding areas Aquatics in reservoir and small grains on surrounding State Management Area.

Principal nesting areas

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Ninepipe National Wildlife Refuge MONTHS OF September TO December, 1970

(1) Species	(2) Weeks of reporting period									
	8/30-9/5 : 1	9/6-9/12 : 2	9/13-9/19 : 3	9/20-9/26 : 4	9/27-10/3 : 5	10/4-10/10 : 6	10/11-10/17 : 7	10/18-10/24 : 8	10/25-10/31 : 9	11/1-11/7 : 10
Swans:										
Whistling						15	15	30	60	60
Trumpeter										
Geese:										
Canada	485	405	405	895	895	895	670	670	705	705
Cackling										
Brant										
White-fronted		15	15	15	15	15	15			
Snow						5	5	5	5	
Blue										
TOTAL GEESE	485	420	420	910	910	915	690	675	710	705
Ducks:										
Mallard	1,960	5,000	5,000	740	740	2,500	3,145	3,145	3,145	6,000
Black										
Gadwall		100	100	50	50	50	100	100	100	
Baldpate	3,530	6,480	6,480	6,550	6,550	4,000	2,170	2,170	2,170	2,000
Pintail	12,760	21,060	21,060	445	445	600	825	825	825	400
Green-winged teal	50	500	500	365	365	500	645	645	645	300
Blue-winged teal	915	200	200							
Cinnamon teal	10									
Shoveler	200			100	100	200	200	200	200	200
Wood	5									
Redhead	1,600	200	200	55	55	100	100	100	100	100
Ring-necked	5									
Canvasback	120									
Scaup	300	200	200	50	50	50	50	50	50	50
Goldeneye										50
Bufflehead										
Ruddy	200	100	100	50	50	50	100	100	100	100
Other										
TOTAL DUCKS	21,655	33,840	33,840	8,405	8,405	8,050	7,335	7,335	7,335	9,200
Coot:										
	8,000	8,000	8,000	4,825	4,825	1,000	650	650	650	200

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	2,065	60	
Geese	59,430	915	
Ducks	1,628,725	33,840	
Coots	257,600	8,000	

SUMMARY

Principal feeding areas Aquatics in reservoir and small grains on surrounding State Management Area.

Principal nesting areas

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1
(Nov. 194

MIGRATOR RDS
(other than waterfowl) Jan Apr 70
Refuge Minepipe Months of to 195

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	2	4/29	2	4/29	Still	Present				
Red-necked Grebe	1	4/7	30	4/29	"	"				
Eared Grebe	30	4/29	30	4/29	"	"				
Western Grebe	2	4/29	2	4/29	"	"				
Great Blue Heron	5	3/12	40	4/29	"	"				
II. Shorebirds, Gulls and Terns:										
Killdeer	2	3/12	50	4/29	Still Present					
California Gull	5	4/29	5	4/29	"	"				
Ring-billed Gull	3	3/2	150	4/29	"	"				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	1	3/12	2	4/7	2	4/7		
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
Bald Eagle	1	3/2	2	3/12	2	3/12		

Reported by **Robert L. Barber**

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751
Form NR-1
(Nov. 194

MIGRATORY BIRDS
(other than waterfowl)

Refuge Minepipe Months of May to Sept. 197 70

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous	Period	3	5/8	Still	Present				
Red-necked Grebe	Previous	Period	225	7/15	Still	Present			75	225
Eared Grebe	"	"	200	5/8	"	"			Unknown	
Western Grebe	"	"	225	7/15	"	"			75	225
Great Blue Heron	"	"	180	7/15	"	"	3	52	75	180
Pied-billed Grebe	1	8/21	1	8/21	"	"			Unknown	
II. Shorebirds, Gulls and Terns:										
Common Snipe	5	5/8	200	7/15	Still	Present			100	
Forester's Tern	15	5/8	75	7/15	"	"			50	
Black Tern	1	6/1	100	7/15	"	"			50	
Killdeer	Previous	Period	500		"	"			300	
California Gull	"	"	1000	8/21	"	"			300	
Ring-necked Gull	"	"	750	8/21	"	"			200	

(over)

(1)	(2)		(3)		(4)	(5)	(6)
III. Doves and Pigeons:							
Mourning dove	10	5/15	100	8/15	Still	Present	
White-winged dove							
IV. Predaceous Birds:							
Golden eagle							
Duck hawk							
Horned owl							
Magpie							
Raven							
Crow							

Reported by R. L. B.

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Ninepipe Months of September to December 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous Period		3	9/1	1	9/15				3
Red-Necked Grebe	"	"	25	9/1	20	9/10				25
Western Grebe	"	"	50	9/1	5	10/10				50
Pied-billed Grebe	"	"	5	9/1	1	9/10				5
Great Blue Heron	"	"	100	9/1	Still Present					100
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous Period		200	9/1	1	12/21				200
Common Snipe	"	"	200	9/1	4	12/8				200
California Gull	"	"	1,000	9/1	30	11/15				1,000
Ring-billed Gull	"	"	750	9/1	5	10/10				750
Forester's Tern	"	"	75	9/1	30	9/15				75
Black Tern	"	"	100	9/1	100	9/1				100

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Previous Period		100	9/1	5	9/15		
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	1	10/26	2	11/25	2	11/25		
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
Bald Eagle	9	11/25	7	11/25	3	12/29		

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR—PORTLAND, OREGON

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Ninepipe For 12-month period ending August 31, 1970

Reported by R. L. B. Title Asst. Ref. Mgr.

(1) Area or Unit Designation	(2) Habitat Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops	0	Ducks	1,564,360	386	324
	Upland	246	Geese	128,759	70	125
	Marsh	572	Swans	4,620	0	0
	Water	1,204	Coots	216,685	200	400
	Total	2,022	Total	1,914,424	656	849
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

Form NR-2
(April 46)

UPLAND GAME BIRDS

Refuge Ninepipe Months of Jan to Apr, 1970

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	b 246 a. grassland								100	
Gray partridge	246 a. grassland								10	

Form NR-2
(April 46)

UPLAND GAME BIRDS

Refuge Nine Pipe Months of May to Sept., 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	246 a. Grass-land		0	125					200	
Gray Partridge	246 a. Grass-land		0						35	

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIR

1613

Refuge Ninepipe Months of September to December, 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	246 a. Grassland								350	Heavy influx into refuge during hunting season.
Gray Partridge	246 a. Grassland								25	

3-1754
Form NP-
(June 1945)

SMALL MAMM

Refuge Minepipe Year ending April 30, 1970

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Meadow Mouse	246 a. grassland													Moderate
Deer Mouse	" "													"
Striped Skunk	" "													"
Muskrat	1,672 a. marsh & water													50
Mink	" " "													Unknown
Badger	246 a. grassland													5
Weasel	818 a. marsh & upland													Low
Beaver	2,000 a. marsh & upland													Occasional
Columbian Groundsquirrel	246 a. grassland													Low
Pocket Gopher	" "													Low
Coyote	" "													Occasional

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert L. Barber

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Bra[illegible]n of Wi[illegible]life Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Ninepipe County Lake State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
								Fallow Ag. Land	

* All permits are issued and all receips are collected by the Bureau of Indian Affairs, Ronan, Montana.

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	23	92	*	270
				2. Other				
				1. Total Refuge Acreage Under Cultivation				0
Hay - Wild				2. Acreage Cultivated as Service Operation				0

3-1570
NR-88
(1/54)

REFUGE GRAIN REPORT

Refuge Ninepipe Wildlife Refuge Months of January through December, 1970

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Barley	900		900			344	344	556		556	

(8) Indicate shipping or collection points

(9) Grain is stored at Headquarters Granary

(10) Remarks

*See instructions on back.

(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge: Ninepipe

Proposal Number:

Reporting Year: 1970

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Applicat
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		NONE						

10. Summary of results (continue on reverse side, if necessary)

3-1750
Form NR-.
(Rev. March 1953)

WATERFOWL

REFUGE Pablo MONTHS OF January TO April, 1970

(1) Species	(2) Weeks of reporting period									
	1/4 - 10 : 1	1/11 - 17 : 2	1/18-24 : 3	1/25-31 : 4	2/1 - 7 : 5	2/8-14 : 6	2/15-21 : 7	2/22-28 : 8	3/1 - 7 : 9	3/8 - 14 : 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

3 -1750a
Cont. N
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pablo MONTHS OF January TO April, 19 70

(1) Species	(2) Weeks of reporting period: 3/15-21 (11)	3/22-28 (12)	3/29-4/4 (13)	4/5-11 (14)	4/12-18 (15)	4/19-25 (16)	4/26-5/2 (17)	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada					2	2	2		42		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other TOTAL GEESE					2	2	2		42		
Ducks:											
Mallard					250	250	250		5,250		
Black											
Gadwall					10	10	10		210		
Baldpate					100	100	100		2,100		
Pintail					5	5	5		105		
Green-winged teal					30	30	30		630		
Blue-winged teal											
Cinnamon teal					10	10	10		210		
Shoveler											
Wood											
Redhead					5	5	5		105		
Ring-necked											
Canvasback											
Scaup					20	20	20		420		
Goldeneye											
Bufflehead					15	15	15		315		
Ruddy					60	60	60		1,260		
Other Merganser					5	5	5		105		
TOTAL DUCKS					510	510	510		10,710		
Coot:					65	65	65		1,365		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	2	42	
Ducks	10,710	510	
Coots	1,365	65	

SUMMARY

Principal feeding areas: Surrounding grain fields

Principal nesting areas:

Reported by: Robert L. Barker

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
53

3-1750
Form NR-1
(Rev. Ma[illegible] 1953)

WATE[illegible]OWL

REFUGE Pablo MONTHS OF May TO September, 19 70

(1) Species	(2) Weeks of reporting period: 5/3 - 9 (1)	5/10-16 (2)	5/17-23 (3)	5/24-30 (4)	5/31-6/6 (5)	6/7 - 13 (6)	6/14-20 (7)	6/21-27 (8)	6/28-7/4 (9)	7/5-11 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada		25	20	20	20	20	20	20	20	20
Cackling										
Brant										
White-fronted										
Snow	5									
Blue										
~~Other~~ Total Geese	5	25	20	20	20	20	20	20	20	20
Ducks:										
Mallard	225	50	50	50	50	50	50	50	75	75
Black										
Gadwall	45	5	5	5	5	5	5	5	5	5
Baldpate	65	10	10	10	10	10	10	10	10	10
Pintail	35									
Green-winged teal	35									
Blue-winged teal	20	10	10	10	10	10	10	10	10	20
Cinnamon teal	5									
Shoveler	50	5	5	5	5	5				
Wood										
Redhead					20	20	20	20	20	20
Ring-necked										
Canvasback										
Scaup					35	35	35	35	35	35
Goldeneye										
Bufflehead										
Ruddy	15	110	110	100	10	10	10	10	10	10
~~Other~~ Merg.	20									
Total Ducks	515	190	190	180	145	145	140	140	165	175
Coot:	0	45	45	45	45	45	60	60	60	60

Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pueblo MONTHS OF May TO Sept., 1970

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	20	20	15	20	150	300	800	(1510)	10570	2	12
Cackling											
Brant											
White-fronted											
Snow								(5)	35		
Blue											
Other											
Total Geese:	20	20	15	20	150	300	800	(1515)	10605	1	18
Ducks:											
Mallard	75	100	100	100	400	800	1285	(3585)	25095	1	18
Black											
Gadwall	5	5	5	5	5	5	5	(125)	875		
Baldpate	10	10	15	15	200	400	750	(1555)	10885		6
Pintail					1000	2000	5375	(8410)	58870		
Green-winged teal						50	50	(135)	945		
Blue-winged teal	20	20	25	25	50	100	150	(510)	3570		24
Cinnamon teal								(5)	35		
Shoveler								(75)	525		
Wood						20	20	(40)	280		
Redhead	20	20	20	50	150	200	425	(1005)	7035		
Ring-necked											
Canvasback											
Scaup	35	35	35	35	100	150	205	(805)	5635	[illegible]	21
Goldeneye											
Bufflehead											
Ruddy	10	10	10	10	10	10	10	(465)	3255		
Other								(20)	140		
Total Ducks:	175	200	210	240	1915	3735	8275	16735	117145	2	69
Coot:	60	60	60	60	100	200	325	(1330)	9310		15

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	10,605	800	12
Ducks	117,185	8,275	69
Coots	9,310	325	15

SUMMARY

Principal feeding areas Aquatics in reservoir and surrounding cereal grain fields.

Principal nesting areas West shore of the reservoir

Reported by R. L. B.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Pablo MONTHS OF September TO December, 19 70

(1) Species	(2) Weeks of reporting period: 1 (8/30-9/5)	2 (9/6-9/12)	3 (9/13-9/19)	4 (9/20-9/26)	5 (9/27-10/3)	6 (10/4-10/10)	7 (10/11-10/17)	8 (10/18-10/24)	9 (10/25-10/31)	10 (11/1-11/7)
Swans:										
Whistling						15	15	15	15	15
Trumpeter										
Geese:										
Canada	940	940	940	1,305	1,305	1,215	1,215	665	665	665
Cackling										
Brant										
White-fronted										
Snow										
Blue										
TOTAL GEESE	940	940	940	1,305	1,305	1,215	1,215	665	665	665
Ducks:										
Mallard	3,250	3,250	3,250	590	590	590	450	450	450	450
Black										
Gadwall	100	100	100							
Baldpate	2,525	2,525	2,525	260	260	260	155	155	155	150
Pintail	13,025	13,025	13,025	640	640	640	125	125	125	50
Green-winged teal	300	300	300	85	85	85	135	135	135	100
Blue-winged teal	100	100	100							
Cinnamon teal										
Shoveler	50	50	50							
Wood	10	10	10	5	5	5				
Redhead	300	300	300	140	140	140				
Ring-necked										
Canvasback	100	100	100				5	5	5	
Scaup	200	200	200	75	75	75	5	5	5	5
Goldeneye										25
Bufflehead										
Ruddy							5	5	5	5
Other										
TOTAL DUCKS:	19,960	19,960	19,960	1,795	1,795	1,795	880	880	880	735
Coot:	6,000	6,000	6,000	3,120	3,120	3,120	100	100	100	50

3 -1750a
Cont. NI
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Patuxent MONTHS OF September TO December, 1970

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling									525		
Trumpeter											
Geese:											
Canada	500	500	200	150	0	0	0	0	78,435		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
~~Other~~ TOTAL GEESE:	500	500	200	150	0	0	0	0	78,435		
Ducks:											
Mallard	400	400	100	100					99,890		
Black											
Gadwall									2,100		
Baldpate	50	50							63,490		
Pintail									289,940		
Green-winged teal									11,620		
Blue-winged teal									2,100		
Cinnamon teal											
Shoveler									1,050		
Wood									315		
Redhead									9,240		
Ring-necked											
Canvasback									2,205		
Scaup									5,915		
Goldeneye	50	50							875		
Bufflehead											
Ruddy									140		
Other											
TOTAL DUCKS:	500	500	100	100	0	0	0	0	488,880		
Coot:									193,970		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	525	15	
Geese	78,435	1,305	
Ducks	488,880	19,960	
Coots	193,970	6,000	

SUMMARY

Principal feeding areas Aquatics in reservoir and Cereal grains in surrounding area.

Principal nesting areas

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-
(Nov. 19-)

MIGRAT[redacted] .RDS
(other than waterfowl)

Refuge Pablo Months of Jan to Apr 19[redacted]7C

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	20	4/29	20	4/29	Still	Present				
Red-necked Grebe	5	4/29	5	4/29	"	"				
Eared Grebe	10	4/29	10	4/29	"	"				
Great Blue Heron	35	4/29	35	4/29	"	"				
II. Shorebirds, Gulls and Terns:										
Killdeer	10	4/29	10	4/29	Still	Present				
California Gull	10	4/29	10	4/29	"	"				
Ring-billed Gull	25	4/29	25	4/29	"	"				

[redacted] (over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	1	4/29	1	4/29	Still	Present		
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of t[illegible] the period concerned.

3-1751
Form MR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo Months of May to Sept. 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous	Period	5	8/27	Still	Present				
Eared Grebe	Previous	Period	25	5/8	Still	Present				
Great Blue Heron	Previous	period	20	5/8	Still	Present				
II. Shorebirds, Gulls and Terns:										
Ring billed Gull	Previous	Period	300	8/27	Still	Present				
Spotted Sand Piper	1	5/8	25	7/27	Still	Present				
Lon. Snipe	200	5/15	200	5/15	Still	Present				
Marbled Godvit	3	5/15	2	5/15	Still	Present				
Kill Deer	45	7/27	45	7/27	Still	Present				

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove								
IV. Predaceous Birds:								
Golden eagle								
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
Marsh Hawk	1	5/8	1	5/8	Still	Present		

Reported by [redacted]

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo Months of September to December 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous	Period	5	9/1	5	9/1				
Eared Grebe	"	"	5	9/1	5	9/1				
Great Blue Heron	"	"	60	9/1	Still Present					
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous Period		50	9/1	5	10/26				
Common Snipe	"	"	200	9/1	5	11/23				
Marbled Godwit	"	"	2	9/1	2	9/1				
Spotted Sandpiper	"	"	25	9/1	1	10/10				
Ring-billed Gull	"	"	300	9/1	20	10/26				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove	2	9/16	2	9/16	1	10/26		
IV. Predaceous Birds:								
Golden eagle								
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
Ospray	1	9/1	1	9/1	1	9/1		

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Pablo For 12-month period ending August 31, 1970

Reported by R. L. B. Title Asst. Ref. Mgr.

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops	175	Ducks	286,405	100	69
	Upland	495	Geese	99,995	4	12
	Marsh	580	Swans	77	0	0
	Water	1,292	Coots	72,450	35	15
	Total	2,542	Total	458,927	139	96
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

3-1752
Form NR-
(April 19

UPLAND GAME B S

1613

Refuge Pablo Months of Jan to Apr, 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	670 a. uplands								150	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

Form NR-2
(April .6)

UPLAND GAME BIRDS

Refuge **Pablo** Months of **May** to **Sept.**, 19 **7**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	**670 a upland**		**0**	**100**					**300**	

3-1752
Form NR-2
(April 1 3)

UPLAND GAME BIRDS

1613

Refuge Pablo Months of September to December, 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	670 a. upland								250	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1754
Form
(June 1945)

SMALL MA

Refuge Pablo Year ending April 30, ~~1940~~

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Meadow Mouse	670 a. upland													Moderate
Deer Mouse	" "													"
Striped Skunk	" "													"
Badger	" "													Low
Columbian Groundsquirrel	" "													Low
Weasel	" "													Moderate
Coyote	" "													2
Muskrat	1,807 a. marsh & water													30
Mink	" " "													Low
Beaver	" " "													2

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert L. Barber

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Pablo County Lake State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
								Fallow Ag. Land	

* All permits are issued and all receipts are collected by the Bureau of Indian Affairs, Ronan, Montana.

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	87	348	*	1,500
				2. Other				
				1. Total Refuge Acreage Under Cultivation				0
Hay - Wild				2. Acreage Cultivated as Service Operation				0

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

Brownie Troop 3512
L. to R.-Babe May, Foreman; Jack Lampshire, Maintenanceman; Bob Barber, Ass't. Mgr.; Grant Hogge, H.D. Mechanic; Ed Krantz, Maintenanceman; Ernie Kraft, Maintenanceman III; Marvin Kaschke, Refuge Manager; Bob Middlemist, Maint'man

Something New
Susan McCollum filled the vacancy left by former Secretary, Sharon Scammon, who transferred to Wildlife Services in Denver.

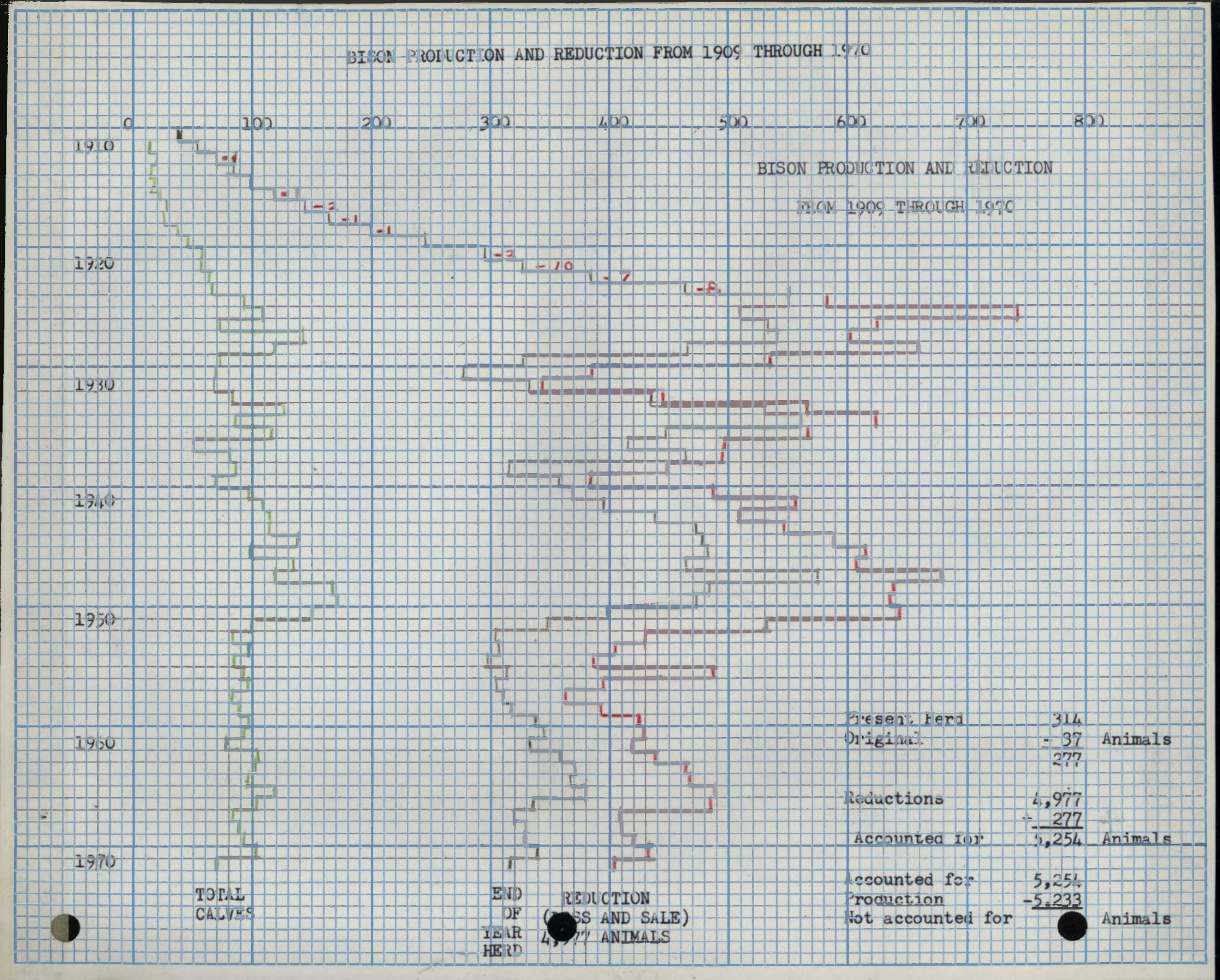
NATURE PROVIDES BEAUTIFUL THINGS

DIANTHUS ARMERIA
(Pink)
1970 was an unusually good year for this plant, and the range was literally "in the pink."

ORTHOCARPUS TENUIFOLIUS
(Owl Clover)

Newly decorated office as seen when entering the front door.

As seen from the other side, "No you can't ride the buffalo or pet the golden eagle.


BISON PRODUCTION AND REDUCTION FROM 1909 THROUGH 1970
0
100
200
300
400
500
600
700
800
1910
1920
1930
1940
1950
1960
1970
-1
-1
-3
-1
-1
-3
-10
-7
-8
BISON PRODUCTION AND REDUCTION
FROM 1909 THROUGH 1970
Present Herd 314
Original - 37 Animals
277
Reductions 4,977
- 277
Accounted for 5,254 Animals
Accounted for 5,254
Production -5,233
Not accounted for Animals
TOTAL CALVES
END OF YEAR HERD
REDUCTION (LOSS AND SALE)
4,977 ANIMALS

Corrigated metal roofs were sand-blasted and sprayed with dark green fiberglass texture coating in an effort to prevent fading, which has been a problem with all paints used to date.

Residing of the frame barn with 26-gauge baked enamel siding should help reduce maintenance costs.

Highlight of the year was a tour with 37 foreign conservationists from the Sixth International Shortcourse on the Administration of National Parks and Related Reserves.

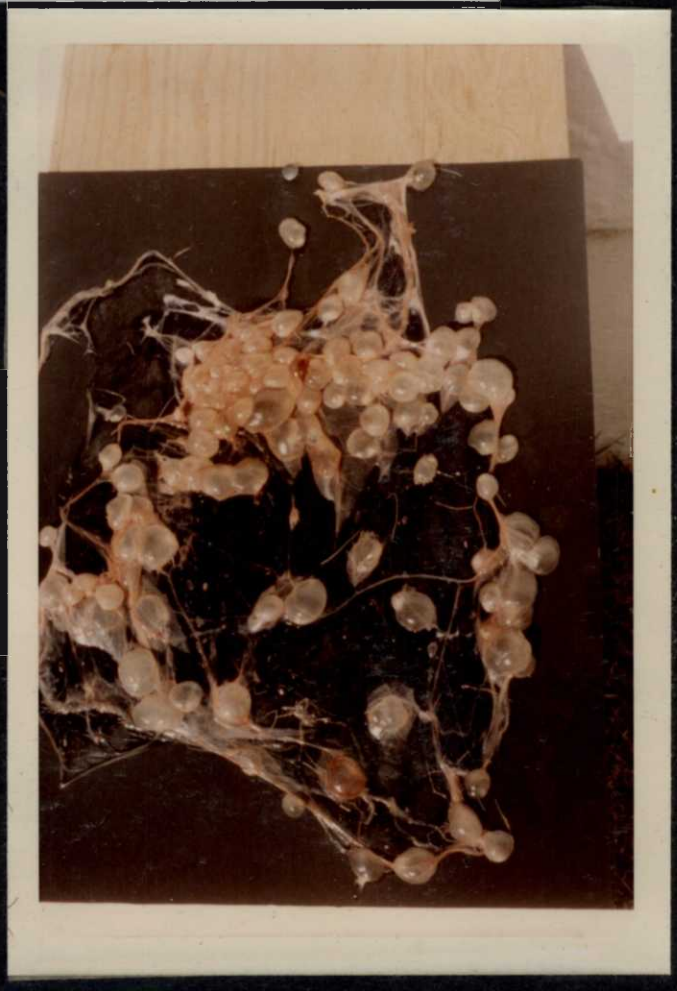
Bob Barber, making a point and a hit as he explains the National Bison Range program.

The Job Corps constructed picnic shelter provides shade during a discussion period.

Gunther Zwanzig - "a true Deutschman," exhibits native country's favorite pastime.

We were also honored to have Ken Grant, Administrator of SCS, for a tour.

Doctor Ray Keyser, DVM performs a "post" on buffalo bull found dead in Upper West range. Results were inconclusive.



Dog tape worm cysts (taenia hydatigena) found in abdominal cavity of a White-tailed deer. These cysts were common in most deer slaughtered a few years ago. However, they are becoming more rere in recent years, in spite of a small increase in coyote population.

"Chittlins" anyone?

Scientist John Craighead, Vince Yovonne, and Harry Reynolds install the collar containing telemetry equipment for the NASA -Smithsonian satallite tracking project.

As soon as the elk was down the NASA team (all 17) including a publicity staff of about six, started the collar installation.

Oh no!! What happened to me while I slept??

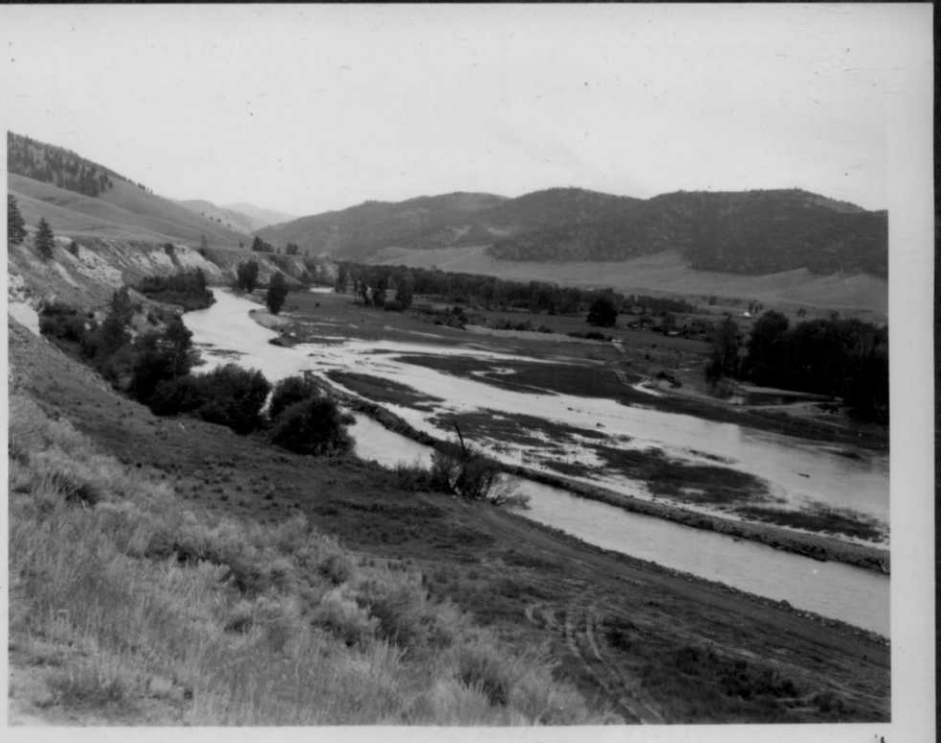
I guess, in the interest of science I'll cooperate. This is even worse than being in the movies.

The antler pile was moved and restacked near the elk display pasture, releiving the traffic jam it always caused at the original location, and tying it in with elk interpretation.

Nearly 300 riders participated in the annual Saddle Club ride.

"Highpoint" provides a scenic view of Falthead Valley and the beautiful Mission Mountains. Riders of all ages participated and enjoyed the ride. Even the old time bow-legged cowboy.

This is the log jam that supposedly caused flooding below. It is located over 1/2 mile upstream from the lower photo.



While investigating flood damage as requested by local ranchers, we found they had started farming an unfenced corner of the Bison Range.

This junk yard is located outside the Refuge boundary, but is an eyesore from one tour route observation point.

The County Sanitarian required the rat infested area be cleaned up. Of course, county equipment and manpower were used to bury the mess.

"Buffy" has a mid-morning snack, growing babies must eat often.

Antelope photographed by Dave Kitchen, Univ. of Michigan, while conducting his behavior study. See report in back for further details and pictures.

Eight new nesting islands were dozed up during low water period of the winter. Each island was topped with a hay-bale platform.

Loose hay was tied on the bales to provide nesting materials. At least two of the islands produced broods, and birds showed some interest in all of the new sites.